Ontario

Ontario Geological Survey
Open File Report 6146

Report of Activities, 2004
Resident Geologist Program

Red Lake Regional Resident Geologist Report:
Red Lake and Kenora Districts

2005

Ontario

ONTARIO GEOLOGICAL SURVEY

Open File Report 6146

Report of Activities, 2004
Resident Geologist Program

Red Lake Regional Resident Geologist Report:
Red Lake and Kenora Districts

by

A. Lichtblau, P. Hinz, C. Ravnaas, C.C. Storey, L. Kosloski, A. Raoul and R. Gula

2005

Parts of this publication may be quoted if credit is given. It is recommended that reference to this publication be made in the following form:

Lichtblau, A., Hinz, P., Ravnaas, C., Storey, C.C., Kosloski, L., Raoul, A. and Gula, R. 2005. Report of Activities 2004, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts; Ontario Geological Survey, Open File Report 6146, 97p.

© Queen's Printer for Ontario, 2005

© Queen's Printer for Ontario, 2005.

Open File Reports of the Ontario Geological Survey are available for viewing at the Mines Library in Sudbury, at the Mines and Minerals Information Centre in Toronto, and at the regional Mines and Minerals office whose district includes the area covered by the report (see below).

Copies can be purchased at Publication Sales and the office whose district includes the area covered by the report. Although a particular report may not be in stock at locations other than the Publication Sales office in Sudbury, they can generally be obtained within 3 working days. All telephone, fax, mail and e-mail orders should be directed to the Publication Sales office in Sudbury. Use of VISA or MasterCard ensures the fastest possible service. Cheques or money orders should be made payable to the *Minister of Finance*.

Mines and Minerals Information Centre (MMIC) Macdonald Block, Room M2-17 900 Bay St. Toronto, Ontario M7A 1C3	Tel:	(416) 314-3800
Mines Library 933 Ramsey Lake Road, Level A3 Sudbury, Ontario P3E 6B5	Tel:	(705) 670-5615
Publication Sales 933 Ramsey Lake Rd., Level A3 Sudbury, Ontario P3E 6B5	Tel: Fax: E-mail:	(705) 670-5691(local) 1-888-415-9845(toll-free) (705) 670-5770 pubsales@ndm.gov.on.ca

Regional Mines and Minerals Offices:

Kenora - Suite 104, 810 Robertson St., Kenora P9N 4J2

Kirkland Lake - 10 Government Rd. E., Kirkland Lake P2N 1A8

Red Lake - Box 324, Ontario Government Building, Red Lake P0V 2M0

Sault Ste. Marie - 70 Foster Dr., Ste. 200, Sault Ste. Marie P6A 6V8

Southern Ontario - P.O. Bag Service 43, 126 Old Troy Rd., Tweed K0K 3J0

Sudbury - Level B3, 933 Ramsey Lake Rd., Sudbury P3E 6B5

Thunder Bay - Suite B002, 435 James St. S., Thunder Bay P7E 6S7

Timmins - Ontario Government Complex, P.O. Bag 3060, Hwy. 101 East, South Porcupine P0N 1H0

Toronto - MMIC, Macdonald Block, Room M2-17, 900 Bay St., Toronto M7A 1C3

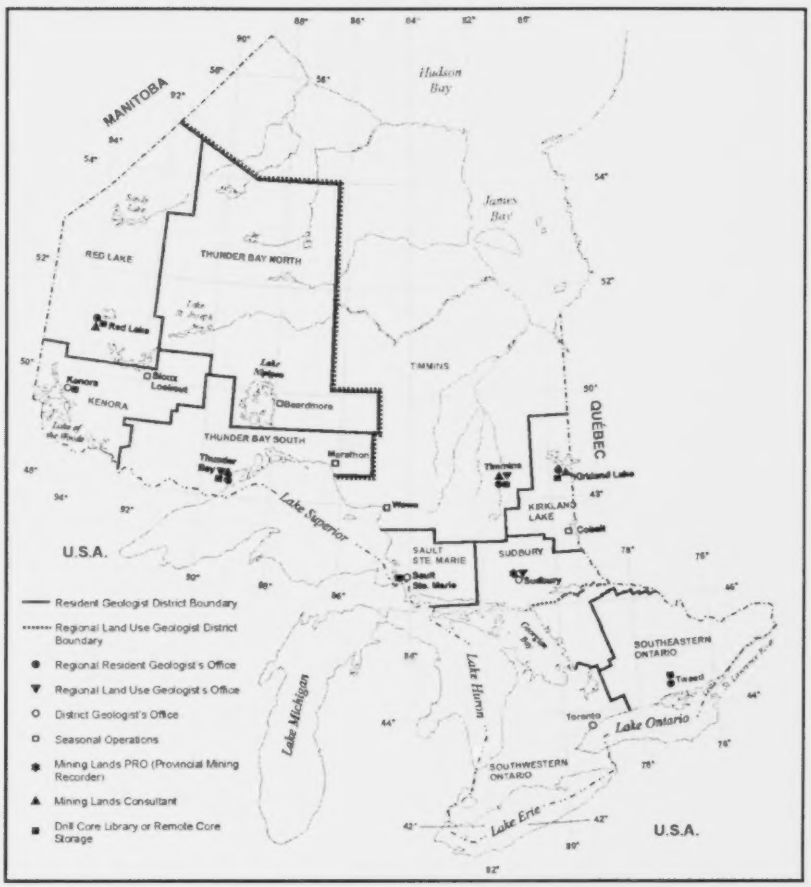
This report has not received a technical edit. Discrepancies may occur for which the Ontario Ministry of Northern Development and Mines does not assume any liability. Source references are included in the report and users are urged to verify critical information. Recommendations and statements of opinions expressed are those of the author or authors and are not to be construed as statements of government policy.

If you wish to reproduce any of the text, tables or illustrations in this report, please write for permission to the Team Leader, Publication Services, Ministry of Northern Development and Mines, 933 Ramsey Lake Road, Level B4, Sudbury, Ontario P3E 6B5.

Cette publication est disponible en anglais seulement.

Parts of this report may be quoted if credit is given. It is recommended that reference be made in the following form:

Lichtblau, A., Hinz, P., Ravnaas, C., Storey, C.C., Kosloski, L., Raoul, A. and Gula, R. 2005. Report of Activities 2004, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts; Ontario Geological Survey, Open File Report 6146, 97p.



Mines and Minerals Division Regional and District Offices

CITY	ADDRESS	OFFICE(S)	TELEPHONE	FAX
Kenora	Suite 104, 810 Robertson St., Kenora P9N 4J2	○ ■	(807) 468-2813	(807) 468-2930
Red Lake	Box 324 Ontario Government Building 227 Howey Street, Red Lake P0V 2M0	● ■ ▲	(807) 727-3272 (807) 727-3284	(807) 727-3553 (807) 727-3553
Thunder Bay - North	Suite B002, 435 James St. S., Thunder Bay P7E 6S7	● ■ ▼ ▲	(807) 475-1331 (807) 475-1311	(807) 475-1112 (807) 475-1124
Thunder Bay - South	Suite B002, 435 James St. S., Thunder Bay P7E 6S7	● ■ ▼ ▲	(807) 475-1331 (807) 475-1311	(807) 475-1112 (807) 475-1124
Sault Ste. Marie	Suite 200, 70 Foster Dr., Sault Ste. Marie P6A 6V8	○ ■	(705) 945-6931	(705) 945-6935
Timmins	Ontario Government Bldg., P.O. Bag 3060, Hwy 101 East, South Porcupine P0N 1H0	● ■ ▼ ▲	(705) 235-1615 (705) 235-1600	(705) 235-1620 (705) 235-1610
Kirkland Lake	10 Government Rd. E., Kirkland Lake P2N 1A2	● ■ ▲	(705) 568-4516 (705) 568-4521	(705) 568-4515 (705) 568-4515
Sudbury	Willet Green Miller Centre, Level B3, 933 Ramsey Lake Rd., Sudbury P3E 6B5	○ ✱ ▼	(705) 670-5735 (705) 670-5737	(705) 670-5681 (705) 670-5807
Tweed	P.O. Bag Service 43, 126 Old Troy Rd., Tweed K0K 3J0	● ■	(613) 478-3161	(613) 478-2873
Toronto	Mines and Minerals Information Centre, Room M2-17, MacDonald Block, 900 Bay St. M7A 1C3	○	(416) 314-3800	(416) 314-3797

ONTARIO GEOLOGICAL SURVEY

RESIDENT GEOLOGIST PROGRAM

REPORT OF ACTIVITIES—2004

RED LAKE REGIONAL RESIDENT GEOLOGIST REPORT

CONTENTS

1. Red Lake District
2. Kenora District

105-05855/

Ontario

Ontario Geological Survey
Regional Resident Geologist Program

Red Lake Regional Resident Geologist (Red Lake District)—2004

by

A. Lichtblau, C.C. Storey, L. Kosloski and R. Gula

2005

CONTENTS

Red Lake Regional Resident Geologist District—2004

INTRODUCTION 1
MINING ACTIVITY 2
Goldcorp Inc.–Red Lake Mine 3
Placer Dome Inc.–Campbell Mine 5
EXPLORATION ACTIVITY 6
Red Lake Greenstone Belt 19
Aquiline Resources–Consolidated Global Minerals 25
Belmont Resources Inc.–Montoro Resources Inc. 25
Conquest Resources Limited 25
Fronteer Development Group Inc.–Alberta Star Development Corp. 26
Goldcorp Inc. 26
Grand Cru Resources Corporation 26
King's Bay Gold Corporation 27
MetalCORP Limited 27
Placer Dome (CLA) Ltd. 27
Planet Exploration Inc. 28
Red Lake Resources Inc. 29
Redstar Gold Corp. 30
Rubicon Minerals Corporation 30
Rupert Resources Ltd. 31
Sabina Resources Ltd. 31
Skyharbour Resources Ltd. 32
Southern Star Resources Inc. 32
Tri Origin Exploration Ltd. 33
Wolfden Resources Inc. 34
Zenda Capital Corp. 34
Birch–Uchi and Confederation Greenstone Belts 34
Bullion Resources Ltd. 34
Cangold Limited 34
Continuum Resources Ltd. 35
Fronteer Development Group Inc. 36
Gold Canyon Resources 36
Red Lake Resources Inc. 37
Sabina Resources Ltd. 37
Skyharbour Resources Ltd. 38
Tribute Minerals Inc. 38
Northern Greenstone Belts 38
Anaconda Gold Corp. 39
Candor Ventures Corp. 39
Goldeye Explorations Limited 39
Sabina Resources Ltd. 39
RESIDENT GEOLOGIST STAFF AND ACTIVITIES 39
DRILL CORE STORAGE SITE 39
PROPERTY EXAMINATIONS 41
Berens River Mine 43
Geology 45
Mineralization 45

RECOMMENDATIONS FOR EXPLORATION 46
Gold In South-Central Red Lake Greenstone Belt 46
Gold in the Northeast Portion of the Red Lake Greenstone Belt 47
Lode Gold in Felsic Plutons 48
Base Metals 48
Molybdenum and Uranium 48
OGS ACTIVITIES AND RESEARCH BY OTHERS 49
REFERENCES 55

Tables

1. Mine production and reserves in the Red Lake District in 2004 1
2. Summary of claims recorded in the Red Lake District, 2004. 2
3. Gold production in the Red Lake District to December 31, 2004. 4
4. Assessment files received in the Red Lake District in 2004. 7
5. Exploration activity in the Red Lake Resident Geologist District in 2004. 13
6. Drill core stored at the Red Lake Resident Geologist's District Remote Drill Core Compound 40
7. Property visits conducted by the Red Lake Regional Resident Geologist and Staff in 2004. 41
8. Publications received by the Red Lake Office in 2004. 49
9. Mineral deposits not being mined in the Red Lake District in 2004 51

Figures

1. Annual gold production in the Red Lake belt, 1986–2004. 1
2. Average monthly price of gold. 2
3. Red Lake District (north part): exploration activity 18
4. Red Lake District (south part): exploration and property examinations 19
5. Red Lake and Birch–Uchi greenstone belts: exploration activity 20
6. Red Lake greenstone belt: exploration and mining activity 21
7. Red Lake greenstone belt: property examinations and mining activity. 22
8. Northern extension of the Red Lake greenstone belt: exploration activity 23
9. Birch–Uchi and Confederation greenstone belts: exploration activity and property examinations. 24
10. Berens River Mine Location Map 42
11. Berens River Mine property: geology and vein locations 44

RED LAKE REGIONAL RESIDENT GEOLOGIST (RED LAKE DISTRICT)—2004

A. Lichtblau[1], C.C. Storey[2], L. Kosloski[3] and R. Gula[4]

[1]Regional Resident Geologist, Red Lake–Kenora, Resident Geologist Program, Ontario Geological Survey

[2]District Geologist, Red Lake District, Resident Geologist Program, Ontario Geological Survey

[3]District Support Geologist, Red Lake District, Resident Geologist Program, Ontario Geological Survey

[4]Acting District Support Geologist, Red Lake District, Resident Geologist Program, Ontario Geological Survey

INTRODUCTION

Gold was the only commodity mined in the Red Lake District in 2004. Total yearly production increased, by approximately 31 789 ounces (4.3%) over last year's total, to 760 931 ounces gold (Table 1). With continuing increases in production rates at both mines, the 1 million ounce annual total is within reach (Figure 1).

Table 1. Mine production and reserves in the Red Lake District in 2004.

Mine	Production in 2003		Production in 2004		Reserves Plus Resources (all categories) at end of 2004	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity	Tonnage	Grade
Goldcorp Inc. Red Lake Mine[1]	242 082 tons @ 2.20 opt Au (219 613 tonnes @ 75.4 g/t Au)	532 028 ounces Au	246 882 tons @ 2.25 opt Au (223 913 tonnes @ 77.15 g/t Au)	551 886 ounces Au	7 003 000 tons (6 353 000 tonnes)	1.08 opt Au (37.0 g/t Au)
Placer Dome (CLA) Ltd. Campbell Mine[2]	400 139 tons @ 0.51 opt Au (363 000 tonnes @ 17.6 g/t Au)	197 114 ounces Au	491 631 tons @ 0.45 opt Au (446 000 tonnes @ 15.3 g/t Au)	209 045 ounces Au	14 011 000 tons (12 711 000 tonnes)	0.43 opt Au (14.6 g/t Au)

(1) Goldcorp Inc., press release, February 22, 2005. (2) Placer Dome Inc., press release, February 23, 2005.

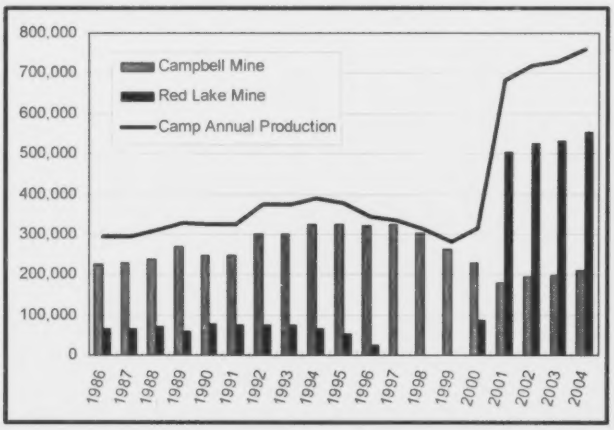


Figure 1. Annual gold production in the Red Lake belt, 1986–2004.
(No production at the Red Lake Mine between 1997 and 1999 due to strike by unionized employees.)

The price of gold continued to rise (Figure 2), closing the year with a December average price of US$442, an increase of 8% relative to the price (US$408) at year-end 2003.

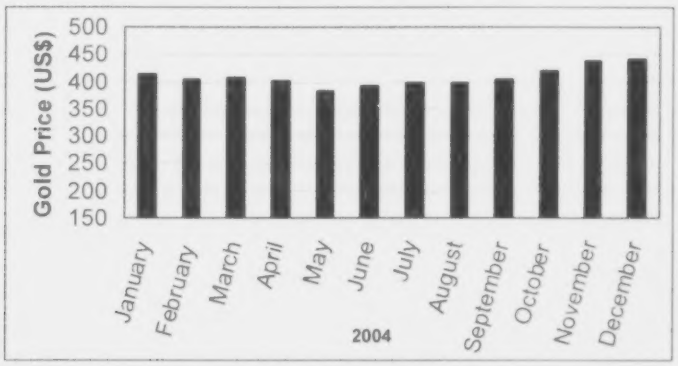


Figure 2. Average monthly price of gold.

Claim staking activity decreased from levels attained in 2002 (Table 2), with most open ground in the Red Lake greenstone belt having been acquired prior to 2004. Staking in the Birch–Uchi greenstone belt also declined. One of the reasons the number of active claim units has declined is the companies' consolidation and rationalization of claim holdings.

Table 2. Summary of claims recorded in the Red Lake District, 2004.

Year	Cancelled (Claim Units)	Recorded (Claim Units)	Active (Claim Units)
2004	3690	2099	18 647
2003	1842	6781	21 127
2002	1795	7689	15 732
2001	290	291	2 269

During 2004, 94 assessment work reports, totalling $9 338 156, were submitted detailing exploration and development work in the Red Lake District, double the value of 2003 assessment work.

Staff of the Resident Geologist's office made 24 visits to active and inactive mineral properties, gave 5 field trips in the Red Lake area, and carried out one mine visit during the year. C. Storey visited 5 granite dimension stone quarries in the Kenora District in November. Field and office activities focussed on delivering high-quality services to the exploration and mining sector. The role of minerals, mining and the role of the prospector, was explained and demonstrated to several First Nation communities, including Sandy Lake and Pikangikum.

MINING ACTIVITY

Gold production in Red Lake continued at Goldcorp Inc.'s Red Lake Mine and at Placer Dome (CLA) Ltd.'s Campbell Mine. Historical statistics for all producers in the district are given in Table 3.

Goldcorp Inc.–Red Lake Mine

Gold production increased by 3.7% over previous year's results with an increased cash cost of US$92 per ounce compared to US$80 per ounce in 2003. Production costs are based on ounces of gold sold, which differs from ounces of gold produced. Goldcorp only sold approximately 2/3 of gold produced (nearly 6.9 tonnes was kept in inventory) in 2004. Total production costs increased due to a stronger Canadian dollar, a larger percentage of higher cost gold produced from concentrate and higher operating costs (news release, February 22, 2005). Grade of ore milled (2.25 ounces Au per ton) was essentially the same as last year (2.20 ounces Au per ton). Recovery increased to 90.3%, compared to 88.6% in 2003. The company poured its 5-millionth ounce of gold on May 6th. Goldcorp issued regular monthly dividends of $0.015 per share.

The US$100 million expansion project (shaft sinking, underground development and mill expansion) continued throughout the year; minor manpower and maintenance issues contributed to a slightly lower than expected rate of shaft sinking (planned for approximately 300 feet per month). At year-end, the No.3 shaft was at 698 m (2700 feet) depth, and the 16 Level station had been completed (Werniuk 2005). Final depth will be 2180 m (7150 feet), with the lowest production coming from the 48 Level, at 2160 m depth. Mill capacity will be increased from the present 625 tons per day to 1000 tons per day, with annual gold production increasing to 725 000 ounces gold. Shaft completion is targeted for the end of 2006, with the entire project completed during 2007.

Approximately US$24 million was spent on the project during the year, for a total of US$60 million since commencement. Another US$50 million is budgeted for completion (news release, February 22, 2005).

Late in the year, Goldcorp Inc. and Wheaton River Minerals Ltd. jointly announced a proposed transaction which provided for Goldcorp to make a friendly take-over bid for Wheaton. Subsequently, Glamis Gold Limited announced its intention to make a take-over bid for Goldcorp, directly to Goldcorp shareholders.

Total ore reserves and resources (measured, indicated and inferred) from all categories, increased by approximately 1.9% at year-end 2004 relative to 2003:

Category	Tons	Grade (ounces gold per ton)	Contained ounces gold
High Grade Ore			
Reserves	1 994 000	2.23	4 443 000
Resources	1 261 000	1.32	1 663 000
Subtotal	3 255 000	1.88	6 106 000
Sulphide Ore			
Reserves	1 425 000	0.39	554 000
Resources	2 323 000	0.38	878 000
Subtotal	3 748 000	0.35	1 432 000
Total Reserves	**7 003 000**	**1.08**	**7 538 000**

Total reserves and resources increased by 139 000 ounces gold; taking into account the 554 000 ounces that were extracted, approximately 693 000 ounces were discovered in 2004.

Table 3. Gold production in the Red Lake District to December 31, 2004.

Mine	Years of Production	Ore Milled (Short Tons)	Gold Produced	
			Troy Ounces	Ounces per Ton
Campbell	1949–Present[1]	19 265 121	10 934 557	0.568
Goldcorp (Dickenson)	1948–Present[1,2]	9 347 394	5 346 548	0.572[3]
Madsen	1938–1976, 1997[4]–1999	8 678 143	2 452 388	0.283[5]
Cochenour–Willans	1939–1971	2 311 165	1 244 279	0.538[6]
McKenzie Red Lake	1935–1966	2 353 833	651 156	0.277
Howey	1930–1941, 1957[7]	4 630 779	421 592	0.091[8]
Hasaga	1938–1952	1 515 282	218 213	0.144
Starratt Olsen	1948–1956	907 813	163 990	0.181
Berens River	1939–1948	560 607	157 341	0.281
Uchi	1939–1943	757 074	114 467	0.151
Jason (Argosy)	1934–1952	276 573	101 875	0.368
H.G. Young	1960–1963	288 179	55 244	0.192
Sachigo River	1938–1941	46 457	52 560	1.131
McMarmac	1940–1948	152 978	45 246	0.296
Gold Eagle	1937–1941	180 095	40 204	0.223
Jackson Manion	1934–1940	105 357	27 142	0.258
Red Lake Gold Shore	1936–1938	86 333	21 100	0.244
Hudson Patricia	1936–1937	11 228	1857	0.165
Buffalo	1981–1982	31 986	1656	0.052
Abino	1985–1986	2733	1397	0.511
Lake Rowan	1986–1988	13 023	1298	0.100
Mount Jamie	1976	972	377	0.388
Kostynuk Brothers	1963–1966	577	1126	1.951
Bobjo	1929	N/A	362[9]	N/A
Bathurst	1927–1937	562	307	0.546
Red Summit	1935–1936	591	277	0.469
Sol d'Or	1933–1936	458	258	0.563
McFinley	1987	N/A	N/A	N/A
TOTAL		**51 524 893**	**22 056 705**	**0.428**

Notes:
(1) Includes final production figures for 2004.
(2) For 1997, 1998 and 1999, no production due to strike by unionized employees.
(3) From 1970, includes production from Robin Red Lake.
(4) Includes clean up of ore and materials from the mine site.
(5) Historic grade, actual grade for 1999 was 0.14 ounce per ton gold.
(6) Includes production from Annco and Wilmar properties.
(7) Continuous production 1930 to 1941; includes 268 ounces recovered from clean up in 1957.
(8) The ore mined at Howey, before sorting totalled 5 158 376 tons.
The average production from run-of-mine ore was therefore 0.0817 ounce per ton gold.
(9) Not included in total production figure
N/A Data not available

Goldcorp budgeted approximately US$14 million for underground exploration drilling and development for 2004.

- **High Grade Zone:** drilling confirms the continuity and high grade nature of reserves between 37 Level and 39 Level (1655 m and 1745 m), as well as the resource area of the Hanging Wall below 2010 m. The deepest high-grade intersections to date have come from vertical depths of between 2350 m and 2490 m (approximately 300 m below the proposed new shaft bottom). For example, hole 37L595BW intersected 1.16 ounces gold per ton over 1.22 m.
- **Footwall Zone:** the vertical extent was increased during the year: it is now known to extend from 1524 m to a depth of 2185 m, with a strike length of approximately 240 m. Total resources now stand at 11.1 million ounces gold, at a grade of 1.0 ounce per ton gold.
- **Hangingwall Zones:** two new potential hanging wall structures (i.e., hangingwall to the High Grade and Sulphide zones) were discovered. Historic surface and underground intersections align with recent underground drill intersections 240 m west, and 730 m south, of the known High Grade and Sulphide zones.
- **Sulphide Zone:** both reserve and resource base were upgraded during the year, with production planned to commence upon completion of the new shaft.
- **Far East Zone:** a resource of approximately 240 000 ounces gold has been previously identified from the 16 Level to 945 m (3100 feet) depth; deep drilling from the 34 Level suggest possible depth extension of the resource to at least 2225 m; e.g., hole 34L1499A intersected 0.78 ounce gold per ton over 1.22 m.

Goldcorp will invest US$14 million in underground exploration (including 302 000 feet of drilling) and development (3000 feet) in 2005.

The mine employed approximately 500 operations employees, including 135 Goldcorp staff, 300 Dynatec Corp. underground operations personnel and 60 Major Drilling Group underground drillers; 50 Cementation Canada personnel were engaged at No.3 shaft. Claude Lemasson was Mine Manager.

Placer Dome Inc.–Campbell Mine

The mine saw a 6% increase in the number of ounces poured; the 12% decrease in grade was offset by a 23% increase in tons milled. Cash cost per ounce gold rose 37%, from US$202 to US$276 per ounce, due to processing of increased tonnage of lower grade ore, increased development work and the stronger Canadian dollar.

The mill operated at 95.7% recovery. Total reserve ounces gold increased marginally, although grade increased substantially, from 12.6 g/t Au to 17.0 g/t Au.

Total reserves and resources in all zones at year-end are

Category	Tonnes	Grade (g/t)	Contained ounces gold
Proven Reserves	1 039 000	18.6	621 000
Probable Reserves	1 574 000	16.0	811 000
Total Reserves	**2 613 000**	**17.0**	**1 432 000**
Measured and Indicated Resources	5 222 000	10.2	1 707 000
Inferred Resources	4 876 000	17.9	2 807 000
Total Resources	**10 098 000**	**13.9**	**4 514 000**
Grand Total	**12 711 000**	**14.6**	**5 946 000**

A total budget of approximately $6.4 million was allocated to mine-site exploration (underground and surface) in 2004. Underground drilling and development work in 2005 is budgeted for $8.8 million; this increased allocation will focus on conversion of inferred to indicated resources, and surface drilling of the "polishing pond" zone (J. Rogers, Placer Dome (CLA) Ltd., personal communication 2005).

In July, Placer Dome started an underground miner training school at Campbell Mine in a stope that is part of their current production plan. The course runs from 6 to 8 weeks, and each course can accommodate 5 students. At the end of the course, the student will received a fully comprehensive Ontario common core training course (*Northern Ontario Business*, October 2004).

The mine had 410 employees at year-end; Peter Busse was Mine Manager.

EXPLORATION ACTIVITY

Assessment work received is listed in Table 4, and a summary of exploration activity is given in Table 5. The 13% increase (from an annual average of US$364 in 2003, to US$410 in 2004) in the price of gold, coupled with exploration successes by several companies, sustained high exploration interest in the Red Lake District.

Table 5 lists the companies and individuals who reported some activity on their property during 2004; several are described in more detail in the following pages. Programs with significant exploration expenditures and/or significant known results, and properties whose location is of particular strategic or geologic interest are described below. Information included in this section is taken from assessment files in the Red Lake Resident Geologist's office, unless otherwise indicated. Programs are keyed to Table 5 and Figures 3, 4, 5, 6, 7, 8 and 9.

Table 4. Assessment files received in the Red Lake District in 2004.

Abbreviations

AEM	Airborne electromagnetic survey
AM	Airborne magnetic survey
ARA	Airborne radiometric survey
Beep	Beep Mat survey
Bulk	Bulk sampling
DD	Diamond drilling
DDH	Diamond drill hole(s)
DGP	Down-hole geophysics
GC	Geochemical survey
GEM	Ground electromagnetic survey
GL	Geological survey
GM	Ground magnetic survey
GRA	Ground radiometric survey
Grav	Gravity survey
HLEM	Horizontal loop electromagnetic survey
HM	Heavy mineral sampling
IM	Industrial mineral testing and marketing
IP	Induced polarization survey
Lc	Linecutting
MMI	Mobile Metal Ion™ soil sampling survey
OD	Overburden drilling
ODH	Overburden drill hole(s)
PEM	Pulse electromagnetic survey
PGM	Platinum group metals
Pr	Prospecting
RES	Resistivity survey
Samp	Sampling (other than bulk)
Seismic	Seismic survey
SP	Self-potential survey
Str	Stripping
Tr	Trenching
UG	Underground exploration/development
VLEM	Vertical loop electromagnetic survey
VLFEM	Very low frequency electromagnetic survey

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Agnew and **Dent** townships	Tribute Minerals Corporation (South Bay Property)	2004	Lc, IP, RES	2.27743	(808-2004)
Baird, Fairlie and Heyson townships	Teck Cominco Ltd. (St. Paul Bay Property)	2003	DDH(5)=1124.5 m, Assays, Mag Susceptibility	2.26646	(1790-2003)
Baird Township and Faulkenham Lake Area	Solitaire Minerals Corp. (South Baird Property)	2003	Property Evaluation, Exploration Program Recommendations	Non-Assessment	
Baird Township and Faulkenham Lake Area	Solitaire Minerals Corp./ United Bolero Development Corporation (South Baird Property)	2004	Grav, Lc	2.28056	(1083-2004)
Baird and **Heyson** townships	English, P.V. (Heyson Claim Block)	2004	AM, AEM	2.27203	(273-2004)
Ball Township	Redstar Gold Corporation /Biron Bay Resources Ltd. (Biron Bay Property)	2003	Str, Channel Samp, Assays	2.27144	(22-2004)
Ball Township	Redstar Gold Corporation /Biron Bay Resources Ltd. (Pipestone West Area)	2003	GL, Lc, Samp, Assays	2.27190	(261-2004)
Ball Township	Tribute Minerals Corporation (Bridget Lake Property)	2002	DDH(7)=939 m, Assays	2.27348	(417-2004)
Ball Township	Melville, R. (Claim 1144392)	2004	Pr, Samp, Assays	2.28917	(1923-2004)
Ball Township	Goldcorp Inc. (Middle Bay Property)	2004	Core recovery, Assays	2.28115	(1129-2004)
Ball and Todd townships	Outokumpu Mines Ltd. (Red Lake Property)	1995-1996	Pr, Samp, Staking, Assays	Non-Assessment	
Bateman Township	Belmont Resources Inc. (Walsh Lake Grid)	2004	GM, Lc, VLF	2.28038	(1065-2004)
Bateman Township	Belmont Resources Inc. /Montoro Resources Inc. (Walsh Lake Property)	2004	DDH(3)=534 m, Assays (Whole Rock, Au)	2.28102	(1116-2004)
Bateman Township	Placer Dome (CLA) Ltd. (Beatrice Peninsula South)	2004	GL, Rock Samp, Assays	2.27722	(789-2004)

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Bateman Township	Placer Dome Inc. /Wolfden Resources Inc. (East Bay Property JV)	2003	Soil Samp, Assays	2.27407	(476-2004)
Bateman Township	Rubicon Minerals Corporation /Wolfden Resources Inc. (East Bay Project)	2004	DDH(8)=5166 m, Assays	2.28217	(1230-2004)
Bateman Township	Skyharbour Resources Ltd. (Black Bear Property)	2004	Till Sampling, Assays	2.27413	(483-2004)
Bateman Township	Wolfden Resources Inc. /Placer Dome Inc. (Rivard's Property JV)	2003	DDH(2)=710 m, Assays	2.26629	(1774-2003)
Bateman, **Dome** and McDonough townships	Goldcorp Inc. (Abino Property)	2001	DDH(34)=15 964 m, Assays, Interpretation and Conclusions of Drilling	2.26572 (Replacing Non-Assessment File with no drill logs)	(1728-2003)
Bateman and Shaver townships	Belmont Resources Inc. (Shaver Lake Grid)	2004	GM, Lc, VLF	2.28151	(1166-2004)
Bateman and Shaver townships	Belmont Resources Inc. /Montoro Resources Inc. (Bateman & Shaver Twp. properties)	2003	GL, Exploration Recommendations	Non-Assessment	
Belanger Township	Tribute Minerals Inc. (Copperlode Property)	2003	IP, GM, (Titan-24), Lc, High Resolution GPS survey	2.27721	(788-2004)
Belanger and Bowerman townships	Tribute Minerals Corporation (Garnet Lake Property – Arrow Zone)	2003	Lc, Titan-24 Survey (IP, RES, MT), High resolution GPS	2.27720	(787-2004)
Blackbear Lake Area	Skyharbour Resources Ltd. /Consolidated Abaddon Resources Inc. (Black Bear Property)	2003-2004	ODH(89)=732 m, Till Samp, Assays	2.27291	(359-2004)
Blackbear Lake Area	Skyharbour Resources Ltd. /Consolidated Abaddon Resources Inc. (Black Bear Property)	2003-2004	DDH(3)=694 m, Assays	2.28345	(1353-2004)
Blackbear Lake, **Coli Lake** and Sobeski Lake areas	Grandcru Resources Corporation (Coli Lake East Property)	2004	Lc, GM	2.28398	(1406-2004)
Blackbear Lake Area and Shaver Township	MetalCorp Ltd. /Goldcorp Inc. (Black Bear Joint Venture)	2004	DDH(10)=3094.9 m, Assays	2.28506	(1518-2004)
Birkett, Corless, Costello, Dent, Earngey, Goodall, Honeywell and Skinner townships, Brownstone Lake, Casummit Lake, Hailstone Lake, Keigat Lake, Little Shabumeni Lake, Narrow Lake, Satterly Lake, Seagrave Lake, Shabu Lake, **Shabumeni Lake**, Usick Lake, Wavell Lake and Zionz Lake areas	Jilbey Gold Exploration Ltd. (Birch–Uchi Project)	2002	Staking, Diamond Exploration and Work Program for 2003	Non-Assessment	

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Brownstone Lake and **Casummit Lake** areas	Tribute Minerals Inc. /Continuum Resources Ltd. (Richardson Lake - McIntyre Bay Property)	2003	GL, MMI, Rock and Soil Samp, Assays	2.27065	(146-2004)
Brownstone Lake, Casummit Lake, Little Shabumeni Lake and Wavell Lake areas	Bullion Resources Ltd. (Blondin-Wavell Lake Project)	2003-2004	GL, GC, Pr, Rock + Soil Samp, Assays	2.27952	(994-2004)
Byshe and **Heyson** townships	Skyharbour Resources Ltd. /ITL Capital Corporation (Heyson Project)	2002-2003	DDH(13)=2018.2 m, ODH(108)=397 m, Lc,GM, MMI, Str, Tr, Pr, Till + Rock Samp, Assays	2.26731 (Replaces two non-assessment files completed in 2003)	(1869-2003)
Byshe and Heyson townships	Solitaire Minerals Corporation (Chukuni Property)	2004	AM	2.27191	(262-2004)
Byshe and Heyson townships	Solitaire Minerals Corporation (Chukuni Property)	2003	Property Evaluation, Exploration Program Recommendations, Samp, Assays	Non-Assessment	
Casummit Lake Area	Cangold Limited /Wolfden Resources Inc. (Argosy Project)	2003-2004	AEM, AM, Assays, DDH(14)=2789.2 m	2.28198	(1210-2004)
Casummit Lake Area	Fronteer Development Group Inc. (Mink Property)	2003	DDH(5)=659.89 m, Assays	2.27597	(663-2004)
Casummit Lake Area	Gold Canyon Resources Inc. (Springpole Lake Property)	2002-2004	Technical Report, (includes Resource Estimates, 2003-2004 DD Assays, 2004 Work Program Recommendations)	Non-Assessment	
Casummit Lake Area	Sunridge Gold Corporation (McIntyre Bay Property)	2003	GL, MMI, Soil and Rock Samp, Assays, Property Evaluation	Non-Assessment	
Casummit Lake and Brownstone Lake Areas	Continuum Resources Inc. (Richardson Lake and McIntyre Bay properties)	2004	DD, Assays	2.28782	(1791-2004)
Casummit Lake and **Keigat Lake** areas	Cangold Limited (Birch Lake Project)	2003-2004	AM, AEM, GL, GC, Rock + Soil Samp, Assays	2.27583	(649-2004)
Coli Lake Area	Planet Exploration Inc. (Sidace Lake Property)	2003	DDH(2)=775.8 m, Assays	2.27432	(503-2004)
Coli Lake Area	Planet Exploration Inc. /Goldcorp Inc. (Sidace Lake Property)	2004	DDH(2)=651 m, Assays	2.28496	(1508-2004)
Coli Lake Area	Rubicon Minerals Corporation (Sidace Lake Property)	2003	AEM, AM	2.26918	(8-2004)
Corless, Dent, Goodall and **Skinner** townships	Fronteer Development Group Inc./Jilbey Enterprises Ltd (Portage Property)	2003	AM, AEM	2.27180	(255-2004)
Dent Township	Consolidated Abaddon Resources Inc. /West Hawk Development Corp. (Jackson-Manion North Gold Property)	2002	MMI, Pr, Rock + Soil Samp, Assays	2.27390	(460-2004)
Dent Township	Skyharbour Developments Ltd. (Huston Option - South Bay Claims)	2003	Samp, Str, Assays	2.26774	(1906-2003)

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Dent Township	Fronteer Development Group Inc. (Shanty Bay Claims)	2004	Pr, Samp, Assays	2.28399	(1407-2004)
Dent, Earngey, Goodall, and **Skinner** townships, Casummit Lake, Keigat Lake, Little Shabumeni Lake, Satterly Lake, Shabu Lake, and Shabumeni Lake areas	Jilbey Gold Exploration Ltd. (Birch-Uchi Project)	2003	GM, Pr, MMI, Rock, Soil and Till Samp, Assays	2.27483	(552-2004)
Dixie Lake Area	Fronteer Development Group Inc. (Dixie Lake Property)	2003	DDH(10)=2220 m, GC, Assays	2.27649	(717-2004)
Dixie Lake and South of Byshe and Willans Townships areas	Fronteer Development Group Inc (Dixie Lake Property)	2003	AM	2.27603	(668-2004)
Dome Township	Goldcorp Inc. (McKenzie Island)	2003	MMI, Soil Samp, Assays	2.27998	(1036-2004)
Dome Township	Goldcorp Inc. (Rahill Bay KRL 1244581 + 1234242 Claims)	2004	GM	2.27770	(833-2004)
Dome Township	Goldcorp Inc. (Rahill Bay KRL 1244584 Claim)	2004	GM	2.27768	(831-2004)
Dome Township	Cypress Development Corp. (McKenzie Island Property)	2004	GL, Pr	2.27870	(931-2004)
Dome Township	King's Bay Gold Corporation (Headway Property)	2004	GM, VLF-EM, Lc	2.27240	(310-2004)
Dome Township	Red Lake Resources Inc. /Grandcru Resources Corporation (Sanshaw-Bonanza Property)	2004	Lc, GM	2.28364	(1375-2004)
Dome Township	Rubicon Minerals Corporation /Golden Tag Resources Ltd. (McCuaig Property)	2002	DDH(15)=4924.2 m, Assays	2.27175	(250-2004)
Dome Township	Rubicon Minerals Corporation (Red Lake Joint Venture "B" and "C" Property)	2003	DDH(10)=3873 m, Borehole Logging Survey, Assays	2.28270	(1278-2004)
Dome Township	Wolfden Resources Inc /Lateegra Resources Corp. (Red Lake Bonanza Property)	2003	DDH(5)=625 m, GL, Assays	2.27080	(160-2004)
Dome Township	Placer Dome (CLA) Ltd. (McKenzie Island Property)	2004	GL, GC, Samp, Petrography	2.28228	(1241-2004)
Dome Township	Aquiline Resources Inc. (Red Lake Dome Claims)	2004	DD, Assays	2.28278	(1286-2004)
Dome and Heyson townships	Cypress Development Corp. (McKenzie Island Property)	2003	DDH(13)=2081.8 m, ODH(133)=911.6 m, Rock and Till Samp, Assays	2.26412	(1570-2003)
Dome and McDonough townships	Condor Consolidated Mines Ltd. (Red Lake Property)	1929, 1931 1936, 1939 1943 1960, 1971	Prospectus, Incorporation and Dormancy Information	Non-Assessment	

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Earngey Township	Interquest Resources Corp. (Uchi Property)	2003-2004	AM	2.27092	(171-2004)
Ellard Lake, Gilleran Lake, Gummer Lake, Lacey Creek, Matthews Lake, Rapson Bay, Stull Lake Thorne Lake and Winters Lake areas	Superior Diamonds Inc. (AEM Diamond Exploration Project)	2002	GL, HM, KIM Samp	Non-Assessment	
Fairlie and **Graves** townships	Skyharbour Resources Ltd. (Slate Bay Project)	2002-2003	ODH(16)=576 m, Pr, Till Samp, Assays	2.26419	(1577-2003)
Gerry Lake and **South of Otter Lake** areas	Tribute Minerals Inc. (Dixie Property)	2003	IP, GM, (Titan-24), Lc, High Resolution GPS survey	2.27442	(512-2004)
Gilleran Lake and **Rapson Bay** areas	Lake Shore Gold Corp. (AEM Gold Project)	2002	GC, GL, HM, Pr, Till + Rock Samp, Assays	2.28001	(1039-2004)
Gilleran Lake, Rapson Bay, Richardson Arm and **Stull Lake** areas	Bema Gold Corporation (Stull Lake Property)	2002-2003	GC, GL, Pr, Soil + Rock Samp, Assays	2.27544	(612-2004)
Goodall and **Skinner** townships, and Shabu Lake Area	Fronteer Development Group Inc. (Portage Property)	2003	Till + Rock Samp, MMI, Geochem, Assays	2.27325	(393-2004)
Honeywell and McNaughton townships, and **Shabumeni Lake Area**	Fronteer Development Group Inc. /Red Lake Resources Inc. (Swain East-Sol d'Or Properties)	2004	GM, Lc	2.27475	(545-2004)
Granite Bay of Sandy Lake and Rathouse Bay areas	Goldeye Explorations Ltd. (Sandy Lake Project)	2002	GL, Pr, Rock Samp, Assays	2.28149	(1164-2004)
Granite Bay and Rathouse Bay areas of Sandy Lake, and Kakapitam Lake Area	Goldeye Explorations Limited (Sandy Lake Gold-Base Metal Property)	2003	Technical Report	Non-Assessment	
Keigat Lake area	Pelangio Mines Inc. /Trade Winds Ventures Inc. (Birch Lake Property)	2004	DDH(4)=1102.59 m	2.28388	(1397-2004)
Lingman Lake Area	Osprey Gold Corp. (Lingman Lake Property)	2003	GL Report with Reserve Estimates	Non-Assessment	
McDonough Township	Grandcru Resources Corporation (Corallen Property)	2003-2004	GM, VLF-EM, Lc	2.28011	(1049-2004)
McDonough Township	Rubicon Minerals Corporation (Slate Bay Property)	2003	DDH(3)=998.5 m, Assays	2.27991	(1029-2004)
Mulcahy Township	Goldcorp Inc. (Trout Bay Project)	2002	Executive Summary Including Assays for DD, Grab and Channel Samp, Revised Resource Inventory Figure	Non-Assessment	
Narrow Lake Area and **Skinner** Township	Teck Cominco Ltd. (Skinner Property)	2003	AM, GC, GL, Rock and Till Samp, Assays	2.26564	(1720-2003)

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Ranger and Willans townships	Ansil Resources Ltd. (Ranger Lake Project)	2003	AM, IP, GM, MMI, Pr, Soil Samp, Assays	2.27016	(95-2004) (99-2004)
Ranger and **Willans** townships	Crossroads Explorations Inc. (Gullrock Property)	2003	AM	2.26962	(44-2004)
Ranger and **Willans** townships	Rupert Resources Ltd. (Gullrock Property)	2004	GM	2.28098	(1112-2004)
Rapson Bay and Stull Lake areas	Aurora Platinum Corp. /Consolidated Takepoint Ventures Ltd. (AEM Exploration Project)	2002	GL, Grab Samp, Exploration Recommendations	Non-Assessment	
Satterly Lake Area	Westchester Resources Inc. (Formerly Nucanolan Resources Inc.) (Satterly Lake Project)	2003	AEM, AVLF, GL, Samp, Assays (Whole Rock)	2.26389	(1554-2003)
Setting Net Lake Area	Anaconda Gold Corp. (Borthwick Lake Project)	2003	GL, Str, MMI, Assays, VLF-EM, Rock + Soil Samp	2.27534	(604-2004)
Setting Net Lake Area	Anaconda Gold Corp. (Borthwick Lake Project)	2004	AEM	2.28156	(1171-2004)
Shabu Lake Area and Skinner Township	Fronteer Development Group Inc. (Portage Property)	2004	DDH(8)=2403.96 m, Assays	2.27924	(971-2004)
Sidney Lake Area	877578 Ontario Ltd. (Claim 1244588 Strawberry Swirl)	2002	Pr, Samp	2.28000	(1038-2004)
Skinner Township	Goldcorp Inc. (Strilchuk Option)	2003	MMI, Soil Samp, Assays	2.27928	(976-2004)
Sobeski Lake Area	Skyharbour Resources Ltd. /Consolidated Abaddon Resources Inc. (Sidace Lake Property)	2003	Till Samp, Assays	2.27287	(355-2004)
South of Otter Lake Area	Tribute Minerals Inc. (Dixie Property)	2003	IP (Titan-24), Lc, High Resolution GPS survey	2.27129	(207-2004)
Sobeski Lake Area	Skyharbour Resources Ltd. /Consolidated Abaddon Resources Inc. (Sidace Lake Property)	2004	DDH(4)=751.7 m, ODH(127)=853 m, GL, Assays (Whole Rock)	2.28267	(1275-2004)
Todd Township	Rubicon Minerals Corporation (Rivard Property)	2002-2003	DDH(15)=5151.8 m, Assays	2.27595	(611-2004)
Todd Township	Rubicon Minerals Corporation /Redstar Gold Corporation (Wolf Bay and Pipestone East Properties)	2003	GL, Rock Samp, Assays	2.27679	(745-2004)
Willans Township	Crossroads Explorations Inc. (Gullrock Property)	2004	OD, Assays	2.28837	(1845-2004)

Table 5. Exploration activity in the Red Lake Resident Geologist District in 2004.

Abbreviations

AEM	Airborne electromagnetic survey	IP	Induced polarization survey
AM	Airborne magnetic survey	Lc	Linecutting
ARA	Airborne radiometric survey	MMI	Mobile Metal Ion™ soil sampling survey
Beep	Beep Mat survey	OD	Overburden drilling
Bulk	Bulk sampling	ODH	Overburden drill hole(s)
DD	Diamond drilling	PEM	Pulse electromagnetic survey
DDH	Diamond drill hole(s)	PGM	Platinum group metals
DGP	Down-hole geophysics	Pr	Prospecting
GC	Geochemical survey	RES	Resistivity survey
GEM	Ground electromagnetic survey	Samp	Sampling (other than bulk)
GL	Geological survey	Seismic	Seismic survey
GM	Ground magnetic survey	SP	Self-potential survey
GRA	Ground radiometric survey	Str	Stripping
Grav	Gravity survey	Tr	Trenching
HLEM	Horizontal loop electromagnetic survey	UG	Underground exploration/development
HM	Heavy mineral sampling	VLEM	Vertical loop electromagnetic survey
IM	Industrial mineral testing and marketing	VLFEM	Very low frequency electromagnetic survey

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
1	Anaconda Gold Corp. (Borthwick Lake Property)	Setting Net Lake Area (Au)	AEM, AMAG (2.28156, 1171-2004)
2	Ansil Resources Ltd. (Ranger Property)	Willans Township (Au)	DDH(1)=365 m, drill core donation
3	Aquiline Resources Inc. /Consolidated Global Minerals Ltd. (Dome Claims Project)	Dome Township (Au)	DDH(2)=659.4 m, Assays (2.28278; 1286-2004)
4	Belmont Resources Inc. /Montoro Resources Inc. (Shaver Lake Property)	Bateman and Shaver townships (Au)	GM, VLF, Lc (2.28151, 1166-2004)
5	Belmont Resources Inc. /Montoro Resources Inc. (Walsh Lake Property)	Bateman Township (Au)	GM, VLF, Lc (2.28038, 1065-2004) DDH(3)=543 m, Samp (2.28102; 1116-2004)
6	Buckner, J.B.	Dent, Mitchell and Skinner townships, and Slate Lake areas (Au)	Staking
7	Bullion Resources Ltd. (Blondin-Wavell Lake Project)	Brownstone Lake, Casummit Lake, Little Shabumeni Lake and Wavell Lake areas (Au, Ag, As, Cu, Pb, Zn)	GL, GC, Pr, Rock + Soil Samp, Assays (2.27952, 994-2004)
8	Cangold Limited /Trade Winds Ventures Inc. (Birch Lake Property)	Casummit Lake and Keigat Lake areas (Au)	AEM, AM (2.27583, 649-2004)
9	Cangold Limited (51%) /Wolfden Resources Inc. (49%) (Argosy Gold Mine Property)	Casummit Lake Area (Au)	AEM, AM, DDH(10)=1817.8m, Assays (2.28198, 1210-2004)
10	Conquest Resources Limited (Alexander Project)	Balmer Township (Au, Ag, As)	IP, MMI, soil sampling, Trenching Assays, GL ,GC, Str DDH(22)=5641 m
11	Candor Ventures Corp. (Shrimp Lake Property)	Armstrong Lake Area (Au, BM)	Staking
12	Candor Ventures Corp. (Tahoe Lake Property)	Mattson Lake Area (Au, BM)	Staking
13	Continuum Resources Ltd. /Tribute Minerals Inc. (McIntyre Property)	Casummit Lake Area (Au)	Assays, DDH(3)=600.75 m (2.28782, 1791-2004)
14	Continuum Resources Ltd. /Tribute Minerals Inc. (Richardson Lake Property)	Brownstone and Casummit lakes Area (Au)	Assays, DDH(7)=1490.15 m (2.28782; 1791-2004)

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
15	Crossroads Explorations Inc. (Gullrock Property)	Willans Township (Au)	Assays, OD (2.28837, 1845-2004)
16	Dan Patrie Exploration Ltd.	Sobeski Lake Area(Au)	Staking
17	Desmeules, M.J.	Hanton Lake and Otter Lake areas (Au)	Staking
18	English, P.V.	Baird, Bateman, Byshe, Dome, Heyson, Killala, Mulcahy and Todd townships, Bruce Lake, Dixie Lake, Medicine Stone Lake areas (Au)	Staking
19	English, P.V.	Dent, Goodall, Mitchell and Skinner townships, Avis Lake, Gerry Lake, Shabu Lake and Uchi Lake areas (Au)	Staking
20	English, P.V. (Heyson Claim Block)	Baird and Heyson townships (Au)	AM, AEM (2.27203, 273-2004)
21	Fronteer Development Group Inc.	Skinner Township and Shabu Lake Area (Au)	Staking
22	Fronteer Development Group Inc. (Shanty Bay Property)	Dent Township (Au)	Pr, Samp (2.28399, 1407-2004)
23	Fronteer Development Group Inc. (50%) /Alberta Star Development Corp. (50%) (Dixie Lake Gold Property)	Dixie Lake Area (Au)	DDH(12)=4370.9 m, assays
24	Fronteer Development Group Inc. /Placer Dome Canada (CLA) Ltd. (Portage Gold Property)	Skinner Township (Au)	DDH(8)=2403.96 m, Assays (2.27924, 971-2004)
25	Fronteer Development Group Inc. /Red Lake Resources Inc. (Sol d'Or Property)	McNaughton Township (Au)	GM, Lc (2.27475, (545-2004) DDH(3)=372 m, Assays
26	Fronteer Development Group Inc. /Red Lake Resources Inc. (Swain East Property)	Shabumeni Lake Area (Au, Cu)	GM, Lc (2.27475, (545-2004) DDH(6)=607 m (Cliff Zone - Au), DDH(2)=105 m (Beaver Pond - Au, Ag, Cu), Assays
27	Golconda Resources Ltd. (Medicine Stone Property)	Baird Township and Medicine Stone Lake Area (Au, Cu)	GM
28	Gold Canyon Resources Inc. (Dole Lake and Sandy Point Properties)	Casummit Lake and Keigat Lake areas (Au)	Staking, GL, Rock Sampling, Str, Channel Samp, GM, AMAG, ARA
29	Gold Canyon Resources Inc. (Springpole Property)	Casummit Lake Area (Au)	Assays, DDH(41)=15,700' AM, ARA, GM, MMI, GL, soil, rock chip + channel sampling Staking
30	Goldcorp Inc.	Ball and Dome townships (Au)	Staking
31	Goldcorp Inc. (Cochenour Willans Mine)	Dome Township (Au)	DDH(1)=1650 m Mine Rehab
32	Goldcorp Inc. (Rahill Bay KRL 1244584 Claim)	Dome Township (Au)	GM (2.27768, 831-2004)
33	Goldcorp Inc. (Rahill Bay KRL 1244581 + 1234242 Claims)	Dome Township (Au)	GM (2.27770, 833-2004)
34	GrandCru Resources Corporation (Coli Lake East Property)	Blackbear Lake, Coli Lake and Sobeski Lake Areas (Au)	Lc, GM (2.28398)
35	GrandCru Resources Corporation (Corallen Property)	McDonough Township (Au)	GM, VLF-EM (2.28011, 1049-2004)
36	Interquest Resources Corp. (Uchi Property)	Earngey Township (Au)	AM (2.27092, 171-2004)
37	King's Bay Gold Corp. (Sidace Lake North Property)	Nungesser Lake Area (Au)	Staking Lc, GM, VLF-EM

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
38	King's Bay Gold Corp. (45%) /Richview Resources Inc. (45%) /Palomino Mining & Exploration (10%) (Headway Property)	Balmer and Dome townships (Au)	GM, VLF-EM, Lc (2.27240, 310-2004) GM, IP DDH(11)=N/A
39	Knox, J.R.	Ear Falls Area	Staking
40	Labine, B.M.	Casummit Lake and Keigat Lake areas (Au)	Staking
41	Magrum, M.M.	Berens Lake, Kavanagh Lake and West of Taillon Lake areas (Au)	Staking
42	Melville, R.W.	Ball Township (Au)	Samp, Assay (2.28917, 1923-2004)
43	Melville, R.W.	Heyson Township (Au)	Staking
44	MetalCORP Limited /Goldcorp Inc. (Black Bear Joint Venture)	Blackbear Lake Area and Shaver Township (Au)	DDH(10)=3094.9 m, Assays (Whole Rock) (2.28506, 1518-2004) GL, Pr, Soil Samp, MMI
45	Osprey Gold Corp. /Lingman Lake Mine)	Lingman Lake Area (Au)	Staking
46	Pelangio Mines Inc. /Trade Winds Ventures Inc. (Birch Lake Property)	Keigat Lake Area (Au)	Assays, DDH(4)=1102.59 m, (2.28388, 1397-2004)
47	Placer Dome (CLA) Ltd. (Beatrice Peninsula South)	Bateman Township (Au)	GL, Rock Samp, Assays (2.27722, 789-2004)
48	Placer Dome Canada (CLA) Ltd. /Claude Resources Inc. (Madsen Mine Property)	Baird Township (Au)	DDH(41)=10 327 m
49	Placer Dome Canada (CLA) Ltd. /Sabina Resources Ltd. /Claude Resources Inc. (Redaurum Property)	Baird Township (Au)	DDH(N/A)=N/A
50	Placer Dome (CLA) Ltd. /Wolfden Resources Inc. (East Bay Property)	Bateman Township (Au)	Winter DDH(75)=27 553 m Summer DDH(22)=16 500 m
51	Placer Dome (CLA) Ltd. (McKenzie Island Property)	Dome Township (Au)	GL, Samp (Rock & Soil), Petrography (2.28228, 1241-2004)
52	Planet Exploration Inc. /Goldcorp Inc. (Sidace Lake Property)	Coli Lake Area (Au)	DDH(2)=651 m, Assays (2.28496, 1508-2004) DDH(28)=12 630 m on Skarn Zone-Upper Duck Lake, Main Discovery Zone, Nungesser Road Target and Far West Target Assays (2.28496, 1508-2004) EM, IP, GM, GL, Pr, MMI
53	Rae, B.	North of Palsen Lake Area (?)	Staking, Beep
54	Red Lake Resources Inc. (Keg Lake and Starratt Channel Properties)	Byshe Township (Au)	GC, GL, Soil Samp, MMI, staking
55	Red Lake Resources Inc. (Wagner Bay-Springpole Property)	Casummit Township (Au)	Lc, GL, Pr, GC, GM, GEM
56	Red Lake Resources Inc. /GrandCru Resources Corporation (Coli Lake (East and West) Property)	Black Bear Lake, Coli Lake and Sobeski Lake areas (Au)	Lc, GM (2.28398, 1406-2004) GL, Pr, MMI
57	Red Lake Resources Inc. /GrandCru Resources Corp. (Corallen Lake (East and West) Property)	McDonough Township (Au)	GM, VLF-EM, GL, Pr, MMI
58	Red Lake Resources Inc. /GrandCru Resources Corp. (Sanshaw-Bonanza Property)	Dome Township (Au)	Lc, GM (2.28364, 1375-2004) DDH(7)=1020 m, Assays

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
59	Redstar Gold Corp. /Biron Bay Resources Ltd. (Biron Bay Property)	Ball and Todd townships (Au, Cu, Zn)	DDH(3)=380 m, Assays
60	Redstar Gold Corp. /Rubicon Minerals Corporation (West Red Lake Property - Pipestone North Property)	Ball and Todd townships (Au, Cu)	DDH(1)=275 m, Assays
61	Ridgestake Resources Inc.	Agnew and Earngey townships and Bruce Lake Area	Staking
62	Rivet, R.J.	Dome Township (Au)	Staking
63	Roscan Minerals Corporation (Formerly Golden Chief Resources Inc.) (Red (Confederation) Lake Property)	South of Otter Lake Area (?)	AEM, AM
64	Rubicon Minerals Corporation (McFinley Gold Project)	Bateman Township (Au)	DDH(72)=10 085 m, Assays
65	Rubicon Minerals Corporation /Goldcorp Inc. (Sidace Lake Project)	Coli Lake Area (Au)	DDH(5)=3022 m
66	Rubicon Minerals Corporation (60%) /Golden Tag Resources Ltd. (40%) (McCuaig Gold Project)	Dome Township (Au)	DDH(10)=1950 m
67	Rubicon Minerals Corporation /Wolfden Resources Inc. (East West Bay Project)	Bateman Township (Au)	DDH(8)=5166 m, Assays (2.28217, 1230-2004)
68	Rupert Resources Ltd. (Gold Centre Property)	Balmer Township (Au)	DDH(1)=607 m
69	Rupert Resources Ltd. (Gullrock Property)	Ranger and Willans townships (Au)	Lc, GM (2.28098, 1112-2004)
70	Sabina Resources Ltd. (Golden Sidewalk Property)	Skinner Township (Au)	Pr, Str, Channel Samp. Assays, Lc, GM, IP
71	Sabina Resources Limited (60%) /Wolfden Resources Inc. (40%) /Interquest Inc. (Follansbee Red Lake Property)	Dome Township? (Au)	DDH(6)=5295 m
72	Sabina Resources Inc. (50%) /Wolfden Resources Ltd. (50%) (Newman-Madsen Property)	Heyson Township (Au)	DDH(16)=5101 m, Assays
73	Skyharbour Resources Ltd. (Shabu Lake Property)	Shabu LakeArea (Au)	Property acquisition
74	Skyharbour Resources Ltd. (Black Bear Property)	Bateman Township (Au)	Till Samp, Assays (2.27413, 483-2004)
75	Skyharbour Resources Ltd. /Bayfield Ventures Corp. /Placer Dome (CLA) Ltd. (Baird Project)	Baird Township (Au)	Pr
76	Skyharbour Resources Ltd. (70%) /Consolidated Abaddon Resources Inc. (30%) (Black Bear II Property)	Black Bear Lake area (Au, Cu, Pb, Zn)	ODH(89)=732 m,Till Samp, Assays (2.27291, 359-2004) DDH(3)=694 m, Assays (2.28345, 1353-2004)
77	Skyharbour Resources Ltd. (70%) /Consolidated Abaddon Resources Inc. (30%) (Sidace Lake Property)	Sobeski Lake area (Au, Cu, Pb, Zn)	DDH(4)=751.7 m, ODH(127)=853 m, GL, Assays (Whole Rock) (2.28267, 1275-2004) DDH(6)=1464 m
78	Skyharbour Resources Ltd. (20%) /Cypress Development Corp. (80%) (McKenzie Island Project)	Dome, Fairlie and Heyson townships (Au)	GL, Pr (2.27870, 931-2004), staking

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
79	Solitaire Minerals Corp. (50%) /United Bolero Development Corp. (50%) (South Baird Property)	Baird Township and Faulkenham Lake Area (Au)	Grav, Lc (2.28056, 1083-2004), Staking
80	Solitaire Minerals Corp. (Chukuni River Claims)	Byshe and Heyson townships (Au)	AM (2.27191, 262-2004), Grav
81	Southern Star Resources Inc. (50%) /Exall Resources Ltd. (50%) (Gold Eagle Property)	Dome Township (Au)	DDH(35)=22 000 m, Assays, 43-101 Technical Report
82	Stares, S.A.	Slate Lake Area (Au)	Staking
83	Tri Origin Exploration Ltd. (Red Lake Extension Property)	South of Otter Lake Area (Au, Ag, Cu, Zn)	GC, MMI, Pr, Gl, GC, OD ODH(47)=210 m, DDH(4)=600 m
84	Tribute Minerals Inc. (Dixie Property)	South of Otter Lake Area (Zn, Cu, Au, Ag)	DDH(2)=1135 m, Assays, BHPEM
85	Tribute Minerals Inc. (Garnet (Arrow zone) Lake Property)	Belanger Township (Zn, Cu, Au, Ag)	DDH(2)=+658 m, Phase 2 DDH(3)=2037 m, Assays Phase 1 DDH(4)=2280 m, Assays, BHPEM
86	Tribute Minerals Inc. (South Bay Property)	Agnew and Dent townships (Zn, Cu, Au, Ag)	Lc, IP, RES (2.27743, 808-2004)
87	Westchester Resources Ltd. (Satterly Lake Property)	Satterly Lake Area (Au)	Lc, Pr, Samp, GC (2.28726, 1731-2004)
88	Williamson, J.M.	Corless, Dent, Goodall and Skinner townships and Gerry Lake and Shabumeni Lake areas (Au)	Staking
89	Placer Dome (CLA) Ltd. /Wolfden Resources Inc. (Marathon Red Lake Property)	Balmer Township (Au)	UGDD=1 from the 39th Level Campbell Mine
90	Wolfden Resources Inc. /Sabina Resources Ltd. (Seeber Property)	Lingman Lake Area (Au)	Staking
91	Zenda Capital Corp. (Mount Jamie Mine Property)	Todd Township (Au)	Pr, Samp

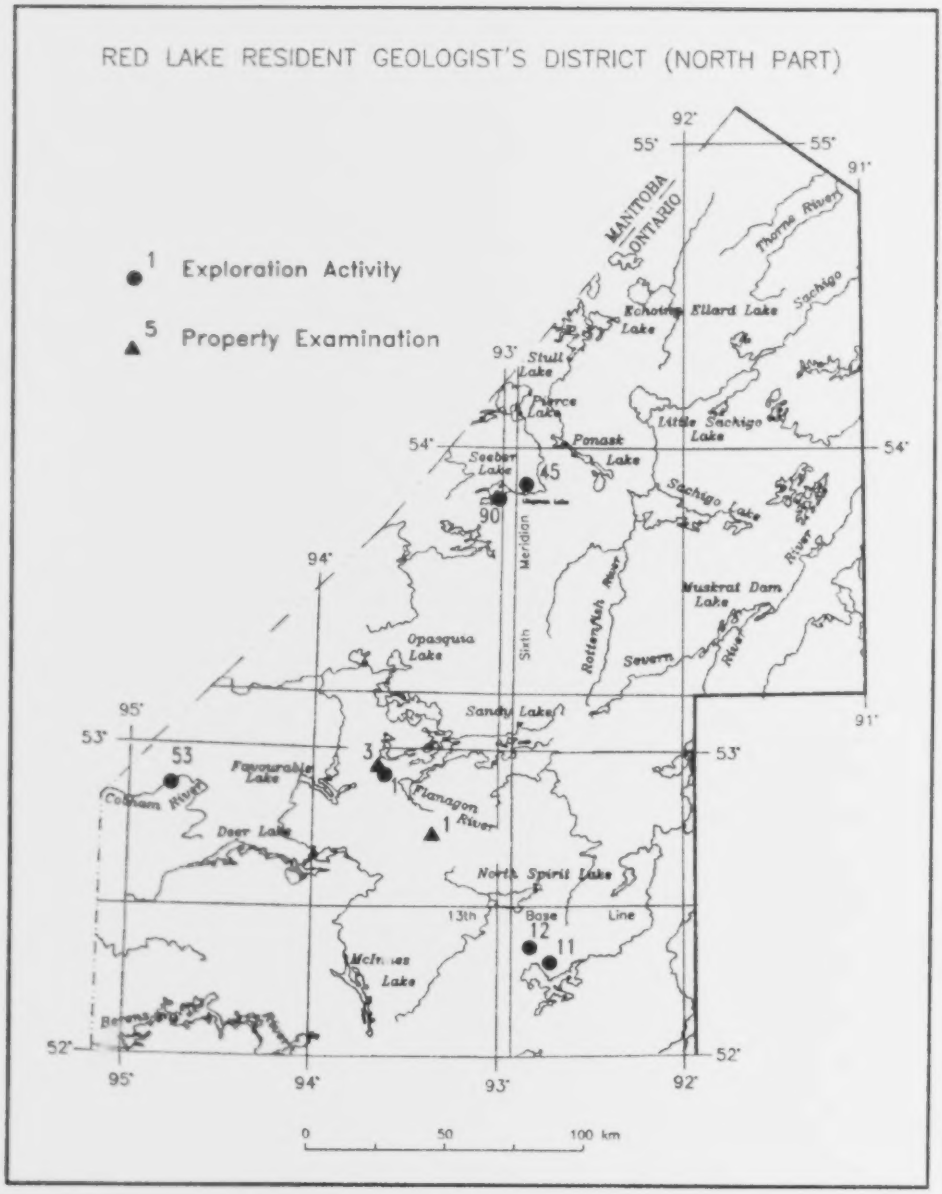


Figure 3. Red Lake District (north part): exploration activity (*see* Table 5).

Red Lake Greenstone Belt

Exploration in the Red Lake belt has continued at a steady pace since 2001. Table 5 lists the companies and individuals who reported some activity on their property during 2004; several are described in more detail in the following pages. The year also saw the final publications of results from multi-year investigations by the Ontario Geological Survey (OGS) and the Geological Survey of Canada (GSC) in conjunction with the Western Superior NATMAP program (Sanborn-Barrie et al. 2004; Sanborn-Barrie, Skulski and Parker 2004). This work and earlier programs have led to a reassessment of the genesis of the gold deposits of the Red Lake greenstone belt. In particular, the unconformity between the Balmer and Confederation assemblages has now been more clearly delineated, having a direct effect on exploration concepts. Recent publications on gold mineralization in the Red Lake camp cited by Lichtblau et al. (2003, 2004), and this volume have influenced mineral deposit models now in use by explorationists in the Red Lake belt and other belts, with similar geological environments.

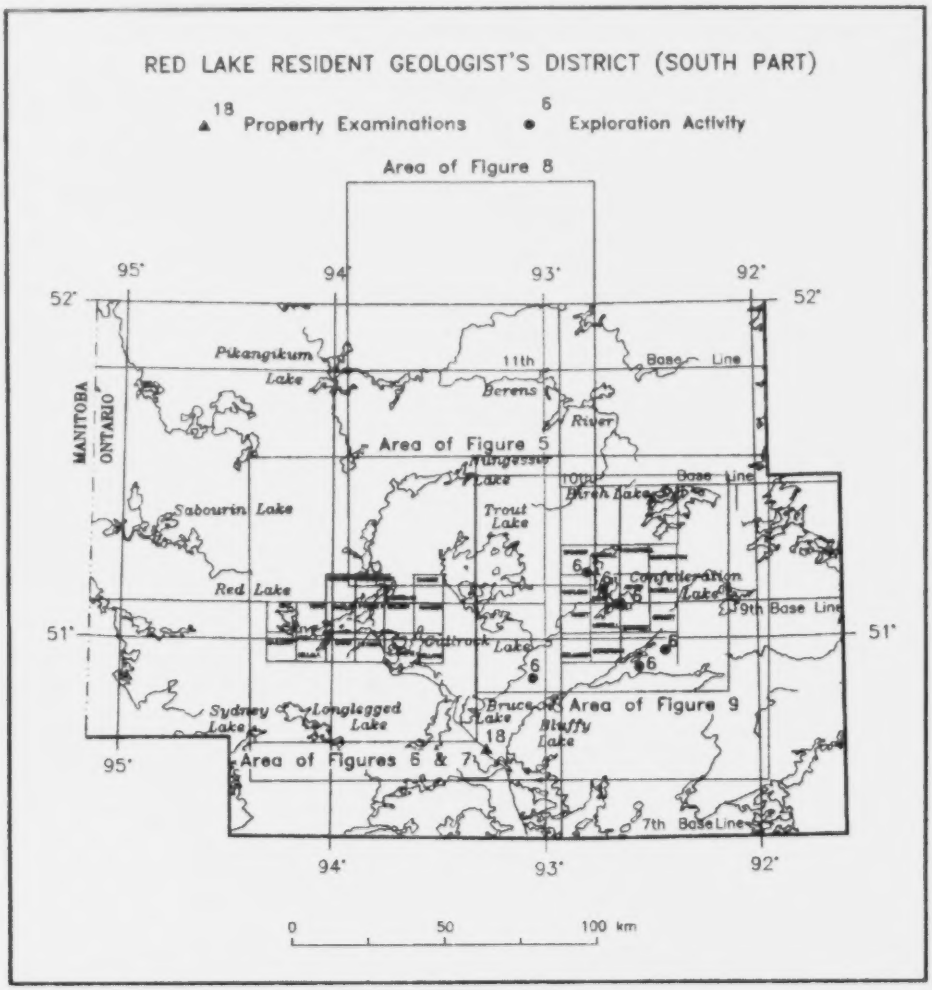


Figure 4. Red Lake District (south part): exploration (*see* Table 5) and property examinations (*see* Table 7).

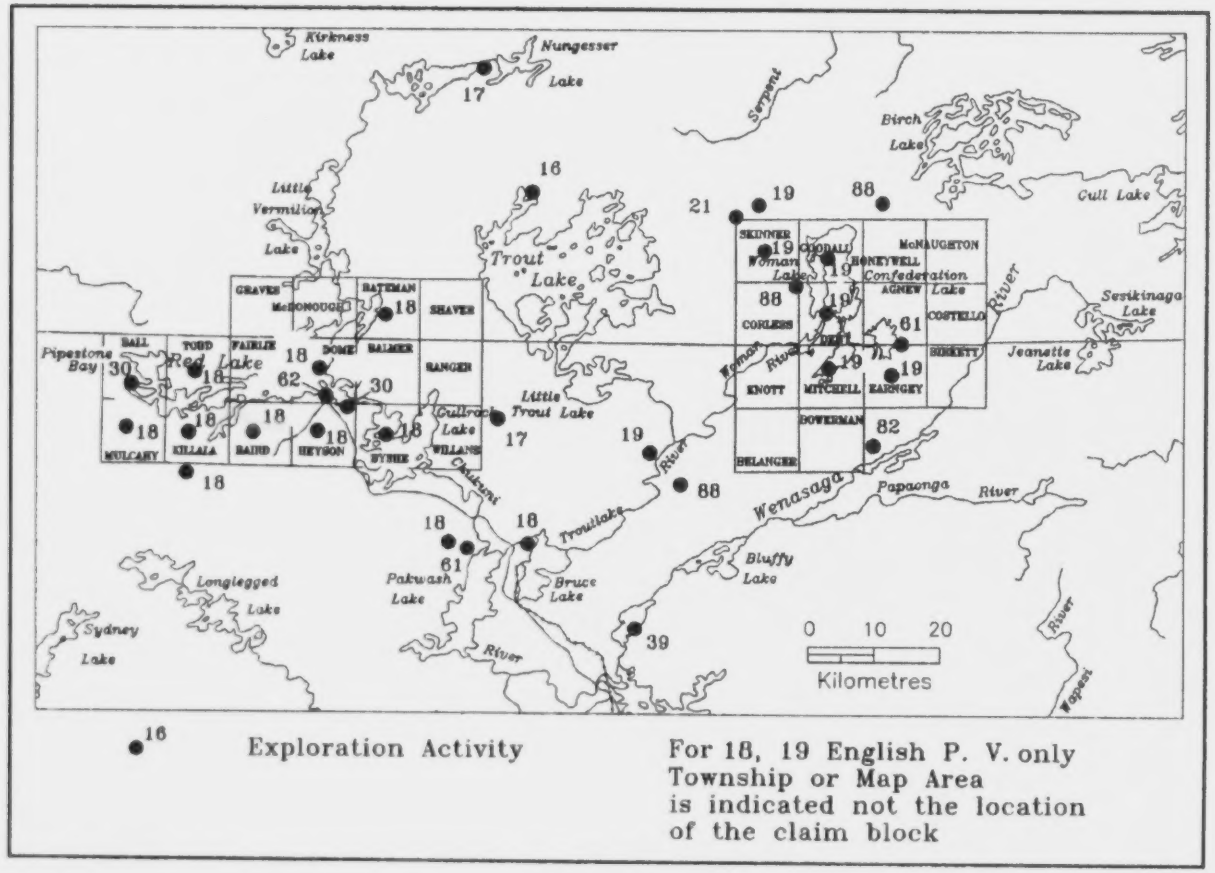


Figure 5. Red Lake and Birch–Uchi greenstone belts: exploration activity (*see* Table 5).

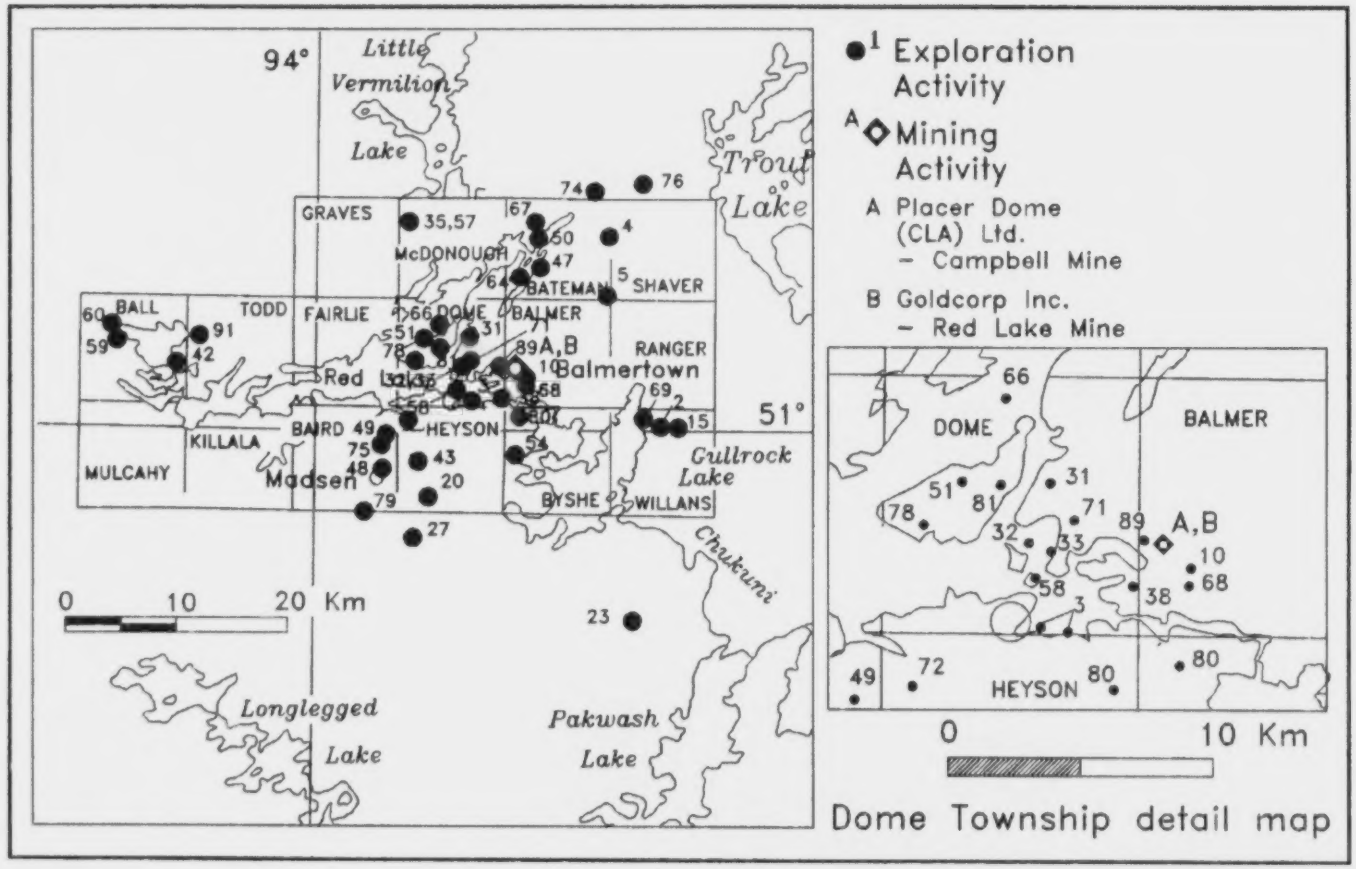


Figure 6. Red Lake greenstone belt: exploration (*see* Table 5) and mining activity.

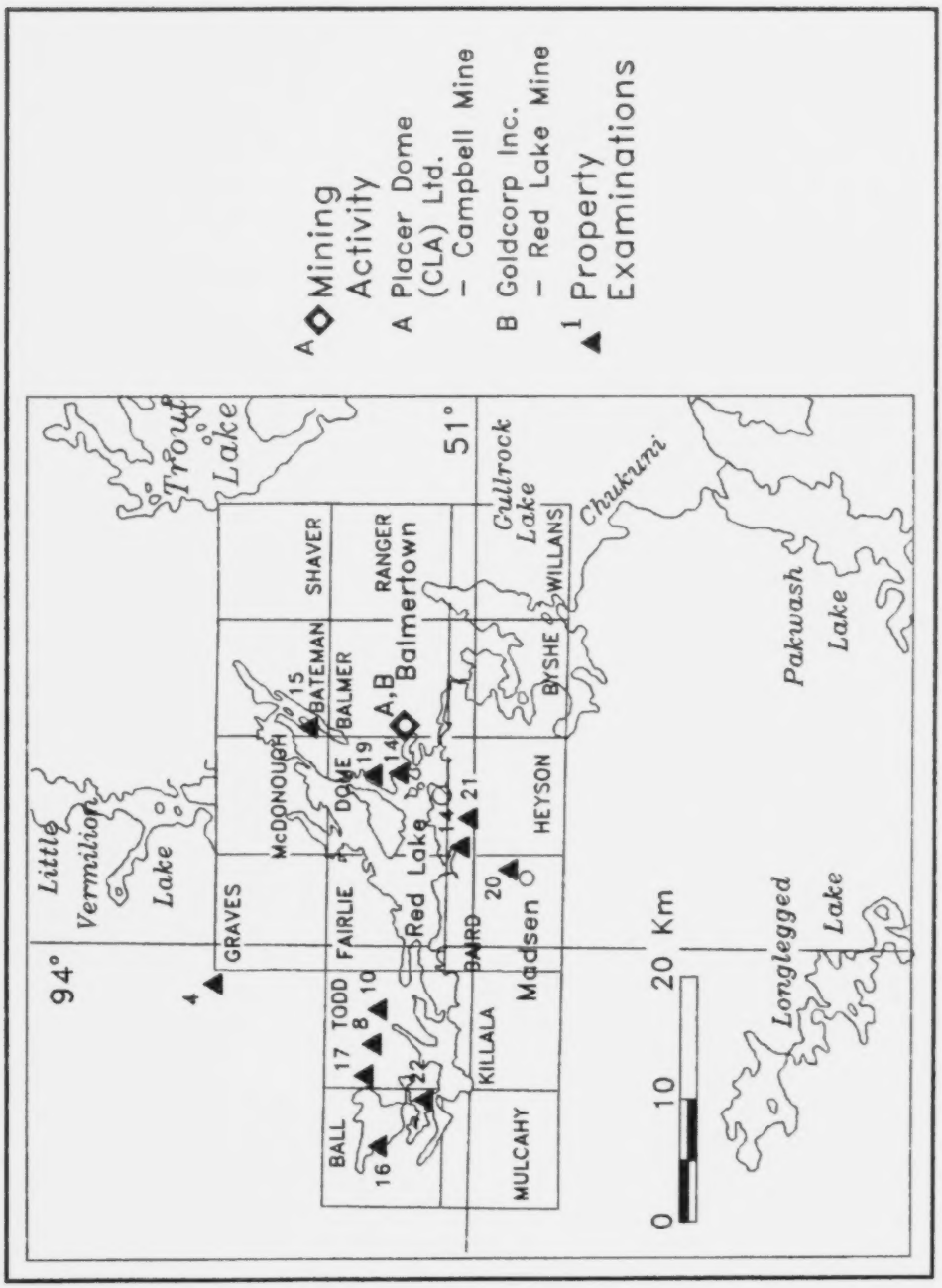


Figure 7. Red Lake greenstone belt: property examinations (*see* Table 7) and mining activity.

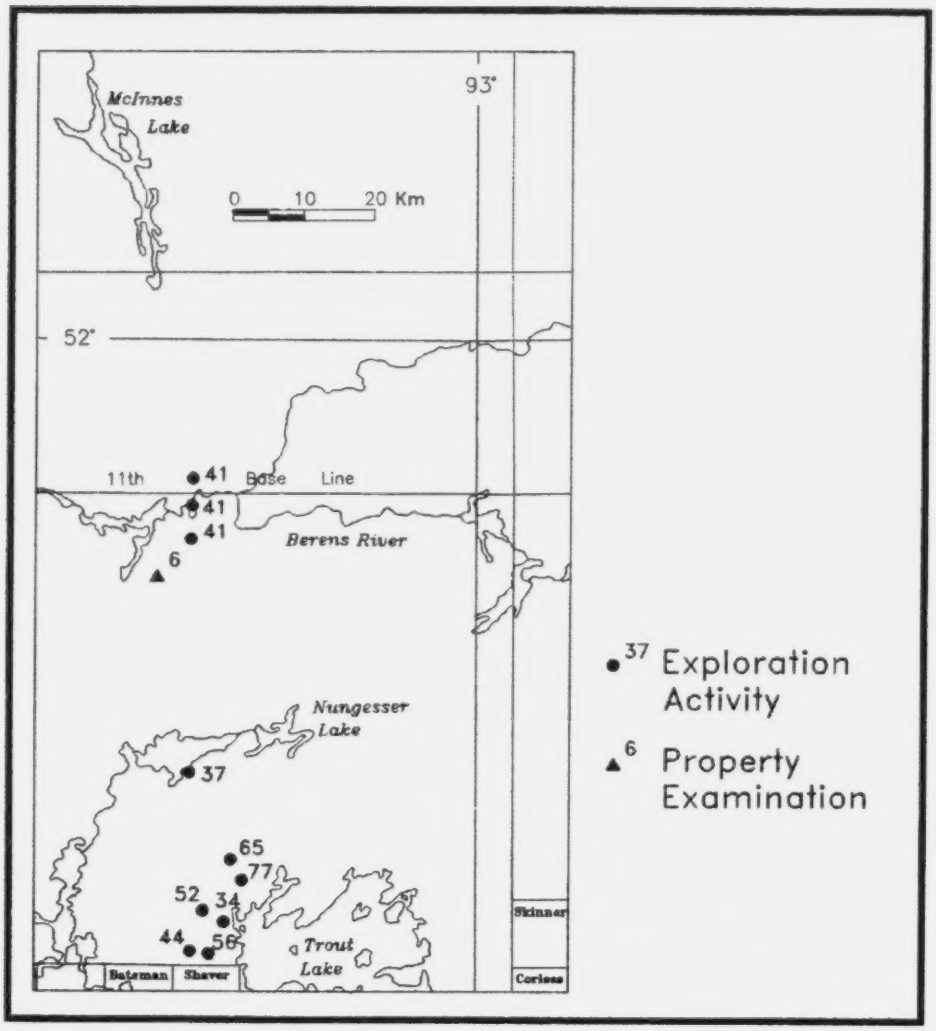


Figure 8. Northern extension of the Red Lake greenstone belt: exploration activity (*see* Table 5).

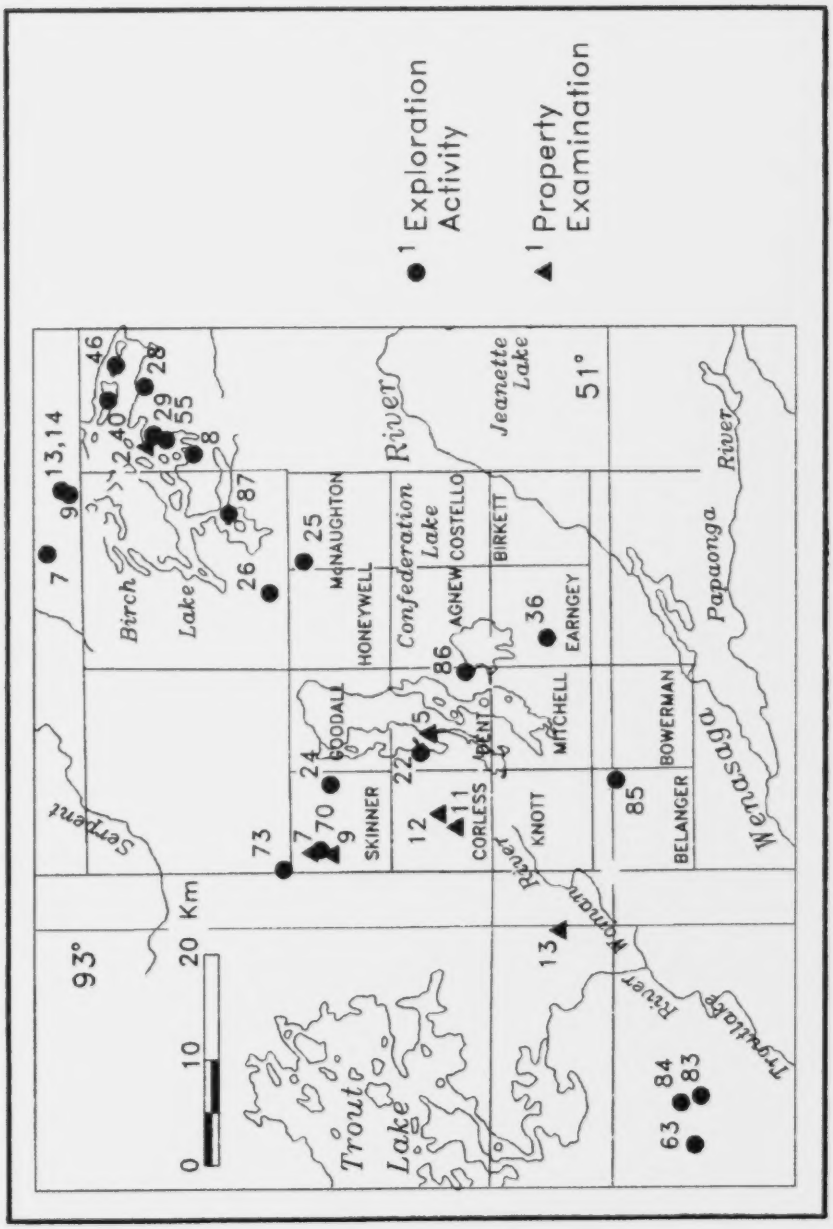


Figure 9. Birch–Uchi and Confederation greenstone belts: exploration activity (see Table 5) and property examinations.

AQUILINE RESOURCES–CONSOLIDATED GLOBAL MINERALS

The companies report that a 1st Phase of drilling was completed in the first quarter of 2004 (Consolidated Global Minerals, news release, March 31, 2004). Approximately 700 m were drilled in 2 holes targeting magnetic anomalies in southern Dome Township. No significant gold assays were reported. Consolidated Global Minerals has also acquired an additional 800 acres of mineral claims (the "Dome Gold Claims") contiguous to the original **Dome Claims property**. Aquiline is the operator of the project.

BELMONT RESOURCES INC.–MONTORO RESOURCES INC.

The companies have a joint venture agreement on 2 claim blocks, the 260 hectare (ha) **Black Bear** property in Bateman and Shaver townships and the **Bateman** property in Bateman Township, also comprising 20 ha. The Black Bear property is located in the northeastern extension of the East Bay deformation zone (EBDZ), immediately south of the MetalCORP–Goldcorp Inc. Black Bear property. The Bateman property is adjacent to Rubicon Minerals claims in Bateman Township.

Work in 2004 included ground geophysical surveys and the drilling of 3 holes, totalling 534 m. No significant assays were reported.

CONQUEST RESOURCES LIMITED

Conquest's **Alexander Property** consists of 27 patented claims (448 ha) adjoining the east side of the Goldcorp Red Lake mine property in Balmer Township. The Alexander claims cover the projection of a wide zone of deformed rocks termed the "Mine Trend", known to extend west from the claims for 8 km, and to extend east to Gullrock Lake, a distance of about 10 km.

Exploration work in 2004 consisted of an induced polarization (IP) geophysical survey and 2 diamond drill programs totalling approximately 5641 m in 22 holes. Significant gold and carbonate alteration was intersected in diamond drilling carried out in the spring of 2004. Follow-up work including geological mapping, stripping, trenching, B-horizon and MMI sampling indicates 4 parallel gold anomalies each with a strike length of 3500 m. One of these anomalies (the "Sulphide Zone") has been confirmed in bedrock trenching and diamond drilling to have a width from 7 to 37 m, and a known strike length of approximately 400 m (news release, January 25, 2005). It comprises disseminated to massive sulphide mineralization (pyrite, pyrrhotite, arsenopyrite) in quartz-carbonate± tourmaline altered and strongly sheared mafic volcanic rocks.

Selected results from this year's drilling programs are highlighted below.

Hole #	Area	From (m)	To (m)	Interval (m)	Grade Au (g/t)
CR-04-16	SW	133.40	134.00	0.60	2.91
CR-04-17	SW	251.87	252.03	0.16	2.74
CR-04-17	SW	252.03	252.75	0.72	4.42
CR-04-20	Central	70.51	70.65	0.14	12.82
CR-04-24	Central	85.84	85.96	0.12	5.49
CR-04-26	Sulphide Zone	131.00	131.31	0.31	4.58
CR-04-32	Sulphide Zone	98.81	98.91	0.10	17.60

Conquest believes similarities exist between mineralization at its new "Sulphide Zone" and that currently being mined by adjacent Goldcorp Inc. The latter's "Far East Zone", to be developed by the Red Lake Mine's No. 3 shaft, is interpreted to lie 450 m southwest of the Alexander property.

FRONTEER DEVELOPMENT GROUP INC.–ALBERTA STAR DEVELOPMENT CORP.

The **Dixie Lake Gold Property** is located 24 km southeast of the town of Red Lake and comprises a total of 117 claim units, totalling approximately 1872 ha. The project is a 50:50 joint venture between Fronteer, the operator, and Alberta Star, the funder. To date, 3 diamond drill programs have been completed (fall 2003, winter 2004 and spring 2004) for a total of 6594 m in 22 drill holes (in 2004, 12 holes were drilled for a total of 4370.9 m). A ground magnetometer survey and a soil survey using the Mobile Metals Ion® (MMI) process were also completed during the year.

Recent programs have focussed primarily on the 88-04 zone, originally discovered by Mutual Resources Ltd. in 1988, and for which a National Instrument 43-101 noncompliant resource estimate of 417 000 tons at a grade of 0.126 ounce gold per ton was previously reported (Janzen 1989 referenced in Lee 2004). This zone comprises an argillaceous interflow sedimentary unit, characterized by replacement style silica-carbonate alteration with strong sulphidization by pyrrhotite-pyrite-arsenopyrite-chalcopyrite-sphalerite. Gold occurs as very fine, free crystals in association with sulphide mineralization; visible gold is common. Selected intersections from the 2004 drilling are given below.

Hole #	From (m)	To (m)	Interval (m)	Grade Au (g/t)
DL-04-04	231.50	232.15	0.65	20.10
DL-04-05	264.02	265.07	1.05	11.20
DL-04-06	336.21	336.88	0.67	44.60
DL-04-06	341.47	342.49	1.02	6.47
DL-04-08	404.46	405.00	0.54	15.00
DL-04-10	476.83	477.36	0.53	20.00
DL-04-11	497.76	499.29	1.53	8.05

Three-dimensional modelling, in conjunction with structural interpretation of airborne and ground magnetic data, indicate that the 88-04 zone is a narrow, slightly curved body entrained in a wide D_2 high strain zone. Enhanced silicification, thickness of the zone and gold mineralization, are interpreted to be controlled by dilational processes occurring within a minor fold hinge along the zone. Four previously unidentified fold hinges in the immediate vicinity of the 88-04 zone remain virtually untested; these are recommended as high priority targets (Lee 2004).

GOLDCORP INC.

Goldcorp Inc. has an extensive land package (approximately 64 180 ha) in the Red Lake belt and has been carrying out exploration activities on several properties, both on its own and with various partners. Goldcorp bought 16.7% of the outstanding shares of Planet Exploration Inc. (*see* "Planet Exploration Inc.") and, at year-end, was operator of the **Sidace Lake Project**. Goldcorp has also entered into an agreement to gain a 60% interest in Rubicon Minerals' **Adams Lake** and **North Red Lake** properties and is working to gain a 50% interest in MetalCORP's **Blackbear Lake Project** (*see* "MetalCORP Limited"). Goldcorp had a US$3.6 million surface exploration budget for 2004.

A ground magnetometer survey was carried out over the water claims of the **Rahill Bay property** in Dome Township (Dehn 2004). Goldcorp also carried out prospecting on its **Middle Bay property**, in the west end of the Red Lake belt.

On the **Cochenour–Willans Mine property,** Goldcorp continued carrying out rehabilitation activities. Demolition of the mill, water tower and associated buildings on the mine site continued. On the same property, the company also commenced 1 deep diamond-drill hole (at year-end, it had reached a depth of approximately 1650 m).

GRAND CRU RESOURCES CORPORATION

The company performed linecutting, ground magnetometer and VLF surveys over its **Coli Lake East** (Coli Lake, Blackbear Lake and Sobeski Lake areas) and **Corallen Lake** (McDonough Township) properties. The options on the **Corallen Lake** and **Sanshaw** (Dome Township) properties were dropped at year-end (news release, December 13, 2004).

KING'S BAY GOLD CORPORATION

King's Bay Gold Corporation currently has 2 properties in the Red Lake greenstone belt. The **Headway Property** in Balmer and Dome townships comprises 6 patented claims located approximately 600 m southwest of Goldcorp Inc.'s new No. 3 shaft. Palomino Mining and Exploration holds a 10% interest, while Richview Resources Inc. has an option to acquire a 45% interest in the property.

Gold mineralization at the Headway is found in quartz stringers in diagonal and cross joints in a porphyry dike that strikes northwesterly across the property (Durocher, Burchell and Andrews 1987). A Phase III, 11 hole diamond drill program was completed, which further tested the "Main Zone". Significant results are tabulated below (news release, July 23, 2004).

Hole #	From (feet)	To (feet)	Interval (feet)	Grade Au (g/t)
HW04-03	55.0	60.0	5.0	1.03
HW04-06	48.0	50.0	2.0	6.50
HW04-06	67.0	70.0	3.0	1.27
HW04-08	35.0	37.0	2.0	1.45
HW04-10	41.0	43.0	2.0	2.67

King's Bay 100%-owned **Sidace Lake North Property,** in the Nungesser Lake area, is located approximately 1 km north of Planet Explorations' property. Additional staking in early 2004 added 83 claim units to the existing 50 units. A ground magnetometer and VLF-EM survey was completed on the property in the spring of 2004.

METALCORP LIMITED

The company's **Blackbear Lake Property** comprises 18 claims, totalling 152 units, in Shaver Township and Blackbear Lake Area. It is adjacent to the south of Planet Exploration–Goldcorp Inc.'s Sidace Lake property. Goldcorp Inc. is earning an initial 50% interest in the property by spending $1.8 million and making cash payments totalling $120 000 over a four-year period.

A first phase, 10 hole diamond drill program, totalling 3094.9 m, was completed in the spring of 2004. Two gold-bearing zones were intersected: 1) hole BB04-06 returned 14.9 g/t Au over 0.30 m between 234.0 m and 234.3 m, in a quartz-pyrite-tourmaline veinlet hosted by a silica-flooded quartz-porphyry dike; and 2) hole BB04-04, which intersected a shear zone with pyritic quartz stringers, assaying 1.73 g/t Au over 1.22 m from 105.34 m to 106.56 m (news release, May 26, 2004).

The summer-2004 program included prospecting, geological mapping and geochemical sampling including an MMI soil survey, as a follow-up on the 2 gold-bearing zones discovered during the spring drill program.

PLACER DOME (CLA) LTD.

Placer Dome spent approximately $5.9 million in 2004 for off-site exploration of its properties in the Red Lake greenstone belt (J. Rogers, Placer Dome (CLA) Ltd., personal communication 2005). The immediate goal of surface exploration is to define near-term mill feed for the Campbell mill. Up to 500 tonnes of additional gold ore per day can be accommodated. Several projects were active in the central Red Lake greenstone belt.

- **Madsen Option:** Placer Dome is in the process of completing its spending commitment of $8.2 million under the option agreement on Claude Resources', Red Lake project (Claude Resources, news release, November 10, 2004). Placer Dome (CLA) Ltd. has the right to earn a 55% interest in the 10 500 acre property. The past producing Madsen Mine (2 452 388 ounces gold produced in 2 periods, 1938–1976 and 1997–1999) has an indicated mineral resource of 790 000 tonnes grading 12.3 g/t Au and an inferred mineral resource of 740 000 tonnes grading 8.6 g/t Au. Most work has centred on the "Treasure Box" area on the north-northeast shore of Russet Lake. A northeast-striking fault along a mafic to ultramafic contact localizes a series of narrow quartz-tourmaline veinlets within weakly altered massive basalt flows (Campbell Mine presentation, April 27, 2004). A two-phase diamond drilling program was undertaken in 2004, totalling 10 327 m in 41 holes.

A conceptual Phase I scenario envisages several micro-pits or trenches to obtain a bulk sample. If results warrant, a ramp would be driven into the zone to a depth of 160 m, when additional sampling and underground definition drilling would constitute Phase II.

- **Redaurum Option:** Placer Dome (CLA) Ltd. is earning an initial 50% interest from Sabina Resources Limited. The property is situated immediately north of the Russet North mineralized zone on the Madsen Option. Placer Dome, the operator, started a drill program at year-end (A. Drost, Sabina Resources Limited, personal communication, 2005).

- **East Bay:** Placer Dome and 50:50 partner Wolfden Resources completed a work program of approximately $6 million comprising 2 phases of drilling in 2004. A 75 hole, 27 553 m winter ice-based program, and a 22 hole, 16 500 m summer, land-based diamond drilling program, targeting down-dip projections of the West Deeps, East Deeps and Hot Spot No.1 zones from the west shore of East Bay of Red Lake. An underground exploration program has been put forward to avoid seasonal (i.e., ice) drilling restrictions and allow for multiple definition drilling phases (Wolfden Resources, news release, July 20, 2004). If surface drilling results warrant, Phase I work (estimated at $10 million) would entail 1) a 1600 m ramp under East Bay, which would start approximately 550 m east of the eastern shoreline and reach a vertical depth of 160 m, which is 120 m below lake bottom; 2) approximately 900 m of development mining; 3) bulk sampling; and 4) underground definition drilling (Placer Dome presentation, April 27, 2004). Phase II would entail additional infrastructure and take the project to production, for an additional $22 million. Preliminary metallurgical tests on composite samples of diamond drill core indicate that the mineralization would not provide significant processing difficulties in the Campbell mill. Selected results from the winter program are given below.

Hole #	Zone	From (m)	To (m)	Interval (m)	Grade Au (g/t)
EB-04-40	GAZ	80.50	82.10	1.60	6.98
EB-04-43	Deep West	385.30	387.50	2.20	15.15
EB-04-47	GAZ	95.00	97.70	2.70	7.48
EB-04-48	HS-1 (deep)	287.70	288.90	1.20	11.50
EB-04-51	EB-South	230.30	230.60	0.30	398.00
EB-04-61	HS-1	192.00	193.00	1.00	10.15
EB-04-66	Deep West	377.50	383.00	5.50	5.15
including	Deep West	377.50	379.50	2.00	10.53
EB-04-74	HS-1	73.50	80.00	6.50	5.14
including	HS-1	73.50	75.00	1.50	11.24
EB-04-83	HS-1	64.50	66.50	2.00	6.51

A winter 2005 program entailing approximately 16 000 m of diamond drilling is being planned.

- **Marathon**: In the third quarter, Placer Dome commenced an underground drill program from the Campbell Mine's 39 Level, which is approximately 5850 feet below surface (Wolfden Resources, news release, September 8, 2004). Placer Dome can earn an initial 50% interest in the property, located adjacent to the southwest of the Campbell Mine, by making $105 000 in payments and funding an initial $2 million in exploration work over a three-year period. The drill program is targeting Campbell-style mineralization on the adjacent Marathon property.

A budget of approximately $2.7 million is planned for 2005. Target areas include the East Bay, Madsen, Redaurum, Baird Skyharbour and Bruce Channel properties.

PLANET EXPLORATION INC.

At year-end, Planet Exploration's **Sidace Lake property** comprised approximately 12 900 ha, in the Coli Lake area, situated in the northeast portion of the Red Lake greenstone belt. Goldcorp Inc. became operator of the project during the first half of the year. The company has performed work sufficient to gain an initial 50% interest in the property.

Three diamond drill programs were undertaken on the property, totalling 12 630 m in 28 holes (including 3 wedges). Drilling focussed on 4 main target areas: 1) Skarn Zone–Upper Duck Lake (previously called "South Zone"), which hosts gold mineralization within skarn-type alteration (epidote-garnet, diopside-calcite) approximately 1 km south of the Main Discovery; 2) Planet's Main Discovery area ("Quartz-Sericite-Schist Zone"or "QSS Zone"), where drilling tested the higher grade core of the zone; 3) Nungesser Road Target, which comprises folded and faulted extensions of the QSS; and 4) Far West Target which focussed on the QSS approximately 4 km southwest of the Main Discovery Zone. Selected results are given below.

Hole	Zone	From (m)	To (m)	Length (m)	Au (gpt)
RL-04-40	Skarn	N/A	N/A	2.70	10.12
RL-04-46	Far West	N/A	N/A	3.85	2.50
RL-04-56	Nungesser Road	189.00	190.00	1.00	2.28
RL-04-61	Skarn	40.00	46.00	6.00	5.71
including	Skarn	42.00	46.00	4.00	8.28
RL-04-62	QSS	516.85	525.00	8.15	4.71
including	QSS	517.78	521.15	3.37	10.24
RL-04-62	QSS	635.00	658.00	23.00	3.38
including	QSS	635.00	635.50	0.50	130.73

Planet believes the results from below 500 m depth in hole RL-04-62 are very encouraging as they prove the downward continuity of the mineralized QSS zone. Delineation drilling is planned for spring 2005 (news release, January 24, 2005).

RED LAKE RESOURCES INC.

Red Lake Resources has 14 properties in the Red Lake and Birch Lake–Confederation Lake greenstone belts.

- **Keg Lake and Starratt Channel Properties:** Geological and geochemical surveys were carried out in 2004. The lake sediment geochemical survey found anomalous gold values in lake sediments over a length of 3.5 km from south-southwest to north-northeast (Red Lake Resources Inc., news release, October 8, 2004).
- **Sanshaw-Bonanza Property:** In 2004, the property was optioned to GrandCru Resources. They carried out line cutting, a ground magnetic survey and a 7 hole 1020 m diamond drill program. Significant results from the drilling include (Red Lake Resources Inc., news release, April 23, 2004):

Hole #	From (m)	To (m)	Interval (m)	Gold (g/t)
RLS-04-01	67.0	114.0	47.0	2.38
includes	77.0	92.0	15.0	3.92
includes	89.0	91.0	2.0	8.79
RLS-04-02	37.0	45.0	8.0	3.08
includes	37.0	41.0	4.0	4.82
includes	37.0	40.0	3.0	5.85
RLS-04-05A	76.0	81.0	5.0	2.49
includes	79.0	81.0	2.0	3.57
RLA-04-06	16.0	19.0	3.0	2.64
and	76.0	85.0	9.0	2.20
includes	82.0	85.0	3.0	2.00
RLS-04-08	22.0	25.0	3.0	1.74
RLS-04-08	71.0	74.0	3.0	1.86

REDSTAR GOLD CORP.

The company is the largest junior landholder in the western Red Lake belt, holding patented and crown land mining claims totalling approximately 6600 Ha. The properties are subdivided into 6 areas: Pipestone South, Pipestone North, Biron Bay, Pipestone East, Newman–Todd and Wolf Bay. The company also has 2 properties in the eastern part of the Red Lake greenstone belt: Baird and Sobel Lake.

- **Biron Bay:** During 2004, the company completed 3 holes of a 12 hole diamond drill program in an attempt to test the depth continuity of the "Ledge" gold showings discovered by Redstar on the property in 2003. These showings are located along a 375 m long structure, and have returned surface values of up to 21.5 g/t gold over 0.60 m. Hole WRL04-003 was drilled under the Ledge showing and intersected 7.66 g/t gold over 0.91 m including 30.9 g/t gold over 0.14 m. Hole WRL04-001 was drilled 200 m along strike from WRL04-003 and intersected 3.25 g/t gold over 1.34 m including 4.27 g/t gold over 0.85 m. This intersection is within a strongly biotite altered felsic volcanic unit with minor chalcopyrite bearing quartz veins (Redstar Gold Corp., news release, May 13, 2004).
- **Pipestone North Property:** One hole was drilled on the Pipestone North property, under the 991 showing discovered by Redstar in 2002–2003. The Pipestone North property is located approximately 1 km north of the Ledge showing. The 991 showing consists of strongly altered and gold mineralized felsic volcanic rocks in contact with a folded ultramafic horizon. WRL04-004 was drilled under the 991 showing, and intersected a 200 m wide zone of intensely silicified and sericitized felsic metavolcanic rocks, exhibiting pyrite and chalcopyrite stringer mineralization, and anomalous gold values. The zone consists of numerous intersections of copper up to 0.23% over 5.5 m with isolated gold values up to 228 ppb (Redstar Gold Corp., news release, May 13, 2004).

RUBICON MINERALS CORPORATION

Rubicon has the largest land position in the Red Lake greenstone belt controlling over 260 km^2 in both wholly owned and joint venture agreements. Rubicon's Red Lake exploration budget for 2004 was anticipated at a minimum of $3.4 million, with $1.3 million contributed by partners.

- **McFinley Mine (Phoenix Zone):** Three drill programs during 2004, on Rubicon's 100% owned McFinley gold project, discovered a new mineralized structure, the Phoenix Zone. A total of 72 holes for 10 085 m were drilled. Significant intersections included (Rubicon Minerals Corporation, press release, September 30, 2004):

Hole #	From (m)	To (m)	Length (m)	Gold (g/t)
PZ-02	45.10	14.99	2.80	14.99
including	45.80	46.90	1.10	28.61
PZ-03	55.10	59.90	4.80	15.46
PZ-09	68.85	72.10	3.25	8.87
PZ-12	136.46	137.86	1.40	28.66
PZ-21	48.46	50.75	2.29	11.06
PZ-21	69.85	71.90	2.05	13.95
PZ-23	74.95	78.05	3.10	70.10
PZ-34	118.10	119.30	1.20	20.54
PZ-43	124.40	125.80	1.40	15.16
PZ-47	119.00	124.30	4.50	9.01
including	122.60	124.30	1.70	22.24
PZ-48	61.00	90.45	29.45	2.21
Including	88.09	90.45	1.47	33.22

The Phoenix Zone currently has a strike length of 250 m and a depth extent of 150 m below surface. The higher grade core of the Phoenix Zone plunges gently to the southwest. The Phoenix Zone remains open along strike to the north and south and at depth below 150 m.

- **Golden Tag Resources McCuaig JV:** work in 2004 consisted of a 10 hole 1950 m diamond drill program to test mineralization discovered in 2002. Strong silicification within ultramafic rocks was encountered over 300 m, but gold assay values were low. The most significant value was 19.1g/t Au over 1.0 m, associated with a narrow quartz vein bearing visible gold (Golden Tag Resources Ltd., news release, April 30, 2004).
- **Sidace Lake (Goldcorp JV):** A 5 hole, 3022 m diamond drill program funded by Goldcorp confirmed the presence of the down-dip extension of the Sidace gold zone (SGZ), a Hemlo-type, gold-bearing, sericite schist horizon. Hole SD-04-01 intersected 18 m of the SGZ horizon and returned anomalous gold values. Hole SD-04-02 intersected a broad zone of the SGZ with numerous anomalous gold-bearing intervals (e.g., 34 m at 0.37 g/t gold). The SGZ is interpreted to be present at depths greater than 600 m beneath the Rubicon claim (Rubicon Minerals Corp., news release, June 24, 2004).
- **East Bay Option (Wolfden Resources Inc. JV):** An 8 hole 5166 m diamond drill program funded by Wolfden intersected anomalous gold values across a 40 m zone of silicified mafic and ultramafic rocks. Gold assays from hole EBW04-01 include 1.85 g/t Au over 4.5 m in biotite-carbonate altered mafic rocks and 1.75 g/t Au over 5 m at the contact between mafic rocks and quartz-feldspar porphyry. Hole EBW04-04 returned 1.98 g/t Au over 7.45 m in massive mafic rock and 1.59 g/t Au over 7.55 m in talcose ultramafic rock. Wolfden subsequently dropped the option (Rubicon Minerals Corp., 3rd Quarter Report, September 30, 2004).
- **East Bay:** Rubicon carried out a 3 hole 1093 m diamond drill program that intersected ultramafic rocks.

RUPERT RESOURCES LTD.

Rupert Resources Ltd. holds 2 properties in the Red Lake camp: the Gullrock Property in Ranger and Willans townships, and the Gold Centre property in Balmer Township.

- **Gullrock Property**: With the exception of parts of 2 claim units, the Gullrock property is entirely under the waters of Gullrock Lake. A total field ground magnetometer survey was carried out in 2004. This survey supports the interpretation of the extension of the Cochenour–Gullrock deformation zone through the Gullrock property.
- **Gold Centre Property:** The Gold Centre property is east of and adjacent to the Goldcorp Inc. Red Lake Mine. In late 2004, a deep diamond drill project was started to explore Balmer assemblage rocks at depth on the property. Hole 04-01 reached 607 m by year end. The intention is to drill a deep vertical hole, using directional drilling techniques to correct hole orientation and keep it vertical; at depth, several daughter holes will be drilled using directional drilling methods. The intended target is the southeastern extension of the major structure that controls the main gold production at Placer Dome's Campbell Mine and Goldcorp's Red Lake Mine (Rupert Resources Ltd., news releases, December 7 and 21, 2004).

SABINA RESOURCES LTD.

Sabina Resources has 3 properties in the Red Lake greenstone belt:

- **Redaurum:** under option to Placer Dome (*see* "Placer Dome (CLA) Ltd.").
- **Follansbee:** Diamond drilling along the 'Contact Zone' identified previously by Wolfden Resources Inc. returned gold assays of 6.1 g/t Au across 5.80 m, and 5.1 g/t Au across 1.0 m. Another intersection wholly contained within metasedimentary rocks above the contact returned gold values between 0.48 g/t Au and 7.09 g/t Au in 0.5 to 1.0 m sample lengths across a 14 m core intersection (Sabina Resources Ltd., news release, December 14, 2004). A wedge off hole #3 intersected a 30 m altered brecciated zone with pervasive silicification, fuchsite, quartz flooding, and sulphide mineralization, including up to 3% arsenopyrite. Weighted average gold values of 2.69 g/t Au across 14 m including 6.99 g/t Au across 2.05 m which includes 12.28 g/t Au over 0.65 m were returned from this zone (Sabina Resources Ltd., news release, February 2, 2005).
- **Newman–Madsen:** The Newman–Madsen property is adjacent to the Redaurum property and 2 km northeast of the past producing Madsen Mine. This property includes the historic Newman–Heyson, Nova–Co and My–Ritt properties. A diamond drill program to test a gold in soil anomaly over a west-northwest-trending structure roughly coincident with the southern contact of the Dome stock, intersected a broad zone (22.25 m) of gold enrichment. Gold values of 14.52g/t Au across 1.0 m and 18.21 g/t Au across 3.65 m are reported from this

enrichment zone (Sabina Resources Ltd., news release, November 17, 2004). To the end of 2004, 16 holes for a total of 5101 m had been drilled; the program is continuing in 2005.

SKYHARBOUR RESOURCES LTD.

Skyharbour has acquired over 11 340 ha (8 properties) in the heart of the Red Lake gold camp, in addition to over 810 ha in the Birch–Uchi greenstone belt 60 km to the east. Skyharbour has option agreements with the following companies, and is operator on all properties:

- **Consolidated Abaddon Resources Inc., Blackbear II Property:** Work on the property consisted of overburden drilling and diamond drilling. An 89 hole, 732 m, overburden drilling program was carried out to sample the base of the till. Till thicknesses varied from 2 to 16 m, the maximum number of gold grains found in any sample was 10. A follow-up 3 hole, 694 m, diamond drill program along the eastern margin of the Blackbear II property did not intersect structures, alteration or gold mineralization.
- **Consolidated Abaddon Resources Inc., Sidace Property:** Work on the Sidace property consisted of geological mapping, a 127 hole 853 m overburden drilling program and 2 phases of diamond drilling. The overburden drilling indicated a cluster of elevated gold in till values in the north part of the property (claim 1244626). The first phase of diamond drilling consisted of 4 holes for 751.7 m. Three holes intersected granitic rocks with no gold values, a broken and brecciated zone was drill intersected that may represent a north-northwest-trending structure interpreted from airborne magnetic data. A fourth hole at the east end of Sidace Lake intersected amphibolite-grade metavolcanic rocks with intercalated metasediments. A second phase of diamond drilling of 6 holes, totaling 1464 m, was designed to extend the volcanic stratigraphy at Sidace Lake; although quartz veins were intersected, they did not return significant gold values (Consolidated Abaddon Resources Inc., news release, December 24, 2004).
- **Black Bear Property:** Work consisted of a large-sample till survey (samples averaged 13 kg) for gold grain evaluation. The results found only background gold grain levels.
- **ITL Capital Corporation–Heyson Property:** Work was limited to evaluation of the data previously acquired (Skyharbour Resources Ltd., news release, June 29 2004).
- **Cypress Developments, McKenzie Island Property:** Exploration in 2004 consisted of prospecting and geological mapping. An additional 6 unit claim was added in March 2004. Diamond drilling is planned for early in 2005.
- **Placer Dome (CLA) Ltd. Bayfield Ventures Corp., Baird Property:** Exploration in 2004 consisted of prospecting and evaluation of previously acquired data (D. Huston, Skyharbour Resources Ltd., personal communication, 2005).

SOUTHERN STAR RESOURCES INC.

Southern Star continued exploration on their **Gold Eagle Mine Project** under option from Exall Resources Ltd. Work during 2004 consisted of 35 surface diamond drill holes, totalling 26 000 m, plus data compilation and evaluation. The property comprises 35 patented claims (totalling approximately 726 ha) in Dome Township. During the period 1937 to 1941, the Gold Eagle Mine produced 40 204 ounces gold from the McKenzie stock. Underground workings of the past-producing McKenzie Red Lake Mine (651 156 ounces gold), advanced to within approximately 150 m of the northern claim boundary of the Gold Eagle property. Adjacent to the northeast corner of the property, the Cochenour–Willans Mine produced over 1 244 000 ounces gold from Campbell–Red Lake style mineralization during the period 1939 to 1971. In the fall of 2004, Micon International was engaged to carry out a resource calculation on the Western Discovery Zone and AMEC Earth and Environmental to perform a base line environmental investigation of the property (Southern Star Resources Inc., news release, October 20, 2004).

The Gold Eagle Project has been subdivided into 6 targets:

1. **Western Discovery:** 27 diamond drill holes for 15 868.5 m gold assays range from 1 g/t to 411.39 g/t Au (Pressacco 2004). Micon International was retained to do an initial mineral resource estimate for the Western Discovery Zone. They determined an inferred resource of 309 000 tonnes of 16.67 g/t Au uncut and 309 000 tons of 13.15 g/t Au with high assays cut to 70 g/t Au.

2. **1946 Zone:** the 1946 Zone is located at the southern part of the property. An assay of 0.17 ounce Au per ton over 1.0 m was intersected in current drilling (J. Whitton, Southern Star Resources Inc., personal communication, 2005).
3. **Gold Eagle Mine:** the original mine
4. **West Wilmar Extension:** West Wilmar Extension is a lower priority target
5. **Northwest Extension:** situated at the north end of the property and constitutes a lower priority target
6. **Bruce Channel:** a total of 8 diamond drill holes, for 9825 m, intersected several strongly silicified zones at depth. Significant gold assays are tabulated below (Southern Star Resources Inc., news releases, May 13, 2004, January 26, 2005):

Hole	From (m)	To (m)	Interval (m)	Gold (g/t)
BC#3	1079.63	1080.53	0.90	51.02
BC#4	1233.15	1233.90	0.75	51.80
	1247.50	1249.50	2.00	14.46
BC#5	220.65	221.50	0.85	3.95
	370.85	372.75	1.89	22.86
including	370.85	371.58	0.73	58.17
	438.35	438.72	0.37	21.43
	1058.70	1059.30	0.60	14.61
BC#6	291.50	292.25	0.75	10.96
	427.60	427.90	0.30	8.36
	437.80	440.40	2.60	11.81
including	437.80	438.90	1.10	18.32
	455.70	456.30	0.60	25.41
	1503.00	1503.60	0.60	5.90
	1515.05	1515.75	0.70	4.70
BC#7	276.50	276.80	0.30	10.45
	280.70	281.10	0.40	28.25
	406.60	406.90	0.30	39.15
	426.78	427.50	0.72	9.14
BC#8	197.60	198.15	0.55	3.55
	223.20	223.90	0.70	4.77
	1064.90	1065.30	0.40	3.12

TRI ORIGIN EXPLORATION LTD.

The **Red Lake Extension** property comprises 525 claim units, totalling 22 000 acres. In 2004, exploration work included prospecting, geological mapping, sampling and soil geochemical surveys, 850 humus and 850 B horizon samples for MMI were taken. A Pionjar overburden drilling project drilled 47 holes for 210 m. Early in 2004, a 4 hole 600 m diamond drill program confirmed the presence of altered metavolcanic rocks of the type that could host gold mineralization. An IP survey and further drilling is planned for 2005.

The **Confederation** property comprises 218 claim units totalling 8720 acres. This is primarily a base metal property east and south of the Red Lake Extension property in Confederation assemblage rocks. Exploration work in 2004 comprised prospecting, line cutting, humus and B-horizon soil sampling.

WOLFDEN RESOURCES INC.

Wolfden holds properties in the Red Lake greenstone belt and in the Birch–Uchi greenstone belt. All these are joint ventures with other companies; several properties are discussed under the joint venture partners.

- **Marathon Red Lake:** The property is adjacent to the southwest of Placer Dome's producing Campbell Mine property, approximately 1200 m from the Reid shaft. Placer Dome can earn up to a 60% interest in the property (Wolfden Resources Inc., press release, January 12, 2004). An underground diamond drill program was started at year-end (*see* "Placer Dome (CLA) Ltd.").
- **Follansbee:** Optioned to Sabina Resources.
- **Newman–Heyson–Nova-Co:** Optioned to Sabina Resources with **My-Ritt** as Newman–Madsen property.
- **Skinner Gold:** Optioned to Sabina Resources.

ZENDA CAPITAL CORP.

The company carried out prospecting and sampling on the **Mount Jamie Mine** in Todd Township in preparation for a more extensive exploration program in 2005. To date, the "Main Zone" has been explored to a vertical depth of only 170 m; future work will include the possible evaluation of deeper targets. The results of this drilling confirm the presence of narrow, high-grade gold-bearing zones. Zenda and Vedron Gold Inc. are earning a combined 75% interest (Zenda 50%; Vedron 25%) in the property from Jamie Frontier Resources Inc.

Birch–Uchi and Confederation Greenstone Belts

The Birch–Uchi and Confederation greenstone belts are geologically similar to the Red Lake belt with the exception that a much larger proportion of the rocks are Confederation assemblage. Both gold and base metals have been historically produced, but there are no currently producing mines. While large areas of ground are held, exploration activity is not as intense as in the Red Lake belt. There has not been the same amount of recent geological research as in the Red Lake belt.

BULLION RESOURCES LTD.

The Blondin–Wavell Lake Property is situated in the Casummit Lake, Little Shabumeni Lake and Wavell Lake claim map areas and comprises 51 contiguous claims, totalling 263 units, originally staked in 2003. In 2003 and 2004, the company performed prospecting, geological and geochemical surveys, including soil sampling, on the southern portion of the claim block (Caughey and Harris 2004).

Prospecting and sampling returned values of 5.64 and 1.13 g/t Au from shear zone and quartz vein float, respectively, and 1.56 g/t Au from a grab sample taken in an historic trench.

CANGOLD LIMITED

During 2004, the company conducted work programs on its 2 properties in the Birch–Uchi greenstone belt.

Cangold has now earned a 51% interest in the **Argosy Gold Mine Property**, comprising 44 patented and 57 unpatented claim units for a total of 101 contiguous claim units, including claims under option from Wolfden Resources Inc. The Argosy Mine produced 101 875 ounces of gold at an average grade of 0.37 ounce gold per ton (intermittently between 1934 and 1952).

An 1814 m, 9 hole, winter drilling program targeted 3 gold zones (#5, #3 and P) with 4 holes. Assay highlights are given below (news release, April 20, 2004).

Hole #	Zone	From (m)	To (m)	Interval (m)	Au (g/t)
AM04-01	#5	49.90	50.20	0.30	52.73
	New	75.00	76.30	1.30	9.15
AM04-08	P	320.75	322.40	1.65	14.20
	P	330.30	334.25	3.95	1.73
AM04-07	P	267.50	268.00	0.50	3.66

Five holes were drilled into an auriferous zone along **Casummit Creek**, 2.5 km southeast of the past-producer, where disseminated sulphide mineralization is associated with quartz-ankerite veins in silicified, sericitized tuffs and argillite. This new zone of sulphide related gold mineralization was previously identified by Cangold during resampling of historical drill core, which returned 4.82 g/t Au over 7.7 m including 2.5 m of 9.41g/t Au (news release, January 12, 2004). Selected assays are given below.

Hole #	From (m)	To (m)	Interval (m)	Grade Au (g/t)
AM04-02	17.0	17.7	0.7	1.83
AM04-05	27.9	32.6	4.7	1.41
including	27.9	28.9	1.0	3.05
AM04-06	25.4	25.7	0.3	1.64
	115.9	116.2	0.3	1.80

Birch Lake Property: Totalling 239 contiguous unpatented claim units staked by Cangold, the property is located 3 km east-southeast of the Argosy Mine in the Casummit Lake and Keigat Lake areas. The property covers 14 km of strike length on a major, northwesterly trending deformation zone that is known to be associated with gold mineralization. Scattered gold mineralization in iron formation has been intersected in several historical drill holes. The company believes the regional geophysical signature on the Birch Lake property to be similar to that of Placer Dome's Musselwhite Mine, in the Thunder Bay North District. During 2004, an airborne geophysical survey, totalling 1267 line-kilometres, was flown over this property, in addition to covering the adjoining Argosy Mine property.

In the third quarter of 2004, Cangold Limited announced (news release, September 2, 2004) it had entered into an agreement with Trade Winds Ventures Inc., whereby the latter can earn up to a 70% interest in Cangold's Birch Lake Property, located immediately north of Trade Winds' own Birch Lake Property. Trade Winds will be the operator.

CONTINUUM RESOURCES LTD.

Continuum Resources Ltd. and Tribute Minerals Corp. have jointly optioned the **McIntyre Property** from Sunridge Gold Corporation, and have the right to earn a combined 70% interest; the adjoining **Richardson Lake Property** is a joint venture between Continuum and Tribute. Continuum is operator of both projects, which comprise a total of 16 claim units.

Three zones of significant goid mineralization are known to lie within the 6 km long McIntyre Bay deformation zone. A 3 hole diamond drilling program was completed on the McIntyre prospect and 7 widely spaced holes on the Richardson Lake property (news release, May 7, 2004). Of particular interest is hole MB04-2 drilled on the McIntyre property, which intersected gold mineralization approximately 100 m below a historic, 20 m deep shaft constructed in the 1930s.

Hole #	From (m)	To (m)	Interval (m)	Au (gpt)
MB04-02	154.60	158.03	3.43	9.60
including	154.60	156.59	1.99	14.65
and	155.18	156.59	1.41	18.82

Trenching and surface sampling by Continuum during 2004 on the McIntyre Bay target returned up to 213 g/t gold over 0.5 m. On the adjacent Richardson prospect, trenching on the same structural zone, where it intersects sulphidized iron formation, returned values up to 4.4 g/t gold over 1.0 m (news release, January 12, 2005).

FRONTEER DEVELOPMENT GROUP INC.

Fronteer Development Group had several active properties in the Birch–Uchi greenstone belt in 2004.

Balmer and **Portage Properties:** The properties were optioned to Placer Dome (CLA) Ltd. in 2003 for a 65% interest. The properties are underlain by Balmer and Woman Lake assemblage rocks situated along the western margin of the belt adjacent to the Trout Lake batholith in Corless, Dent, Knott and Mitchell townships. Fronteer is the operator. In 2004, an 8 hole, 2404 m, diamond drill program was carried-out on the 32 contiguous claims comprising the Portage property. The highest grade intersected was 1.43 g/t Au over 0.75 m, encountered in a silicified, mylonitic metavolcanic in hole P04-05 (Wilson 2004).

Sandy Point Property: The Sandy Point property covers an area of approximately 432 ha in the Keigat Lake claim map area. Gold mineralization is localized along silicified and pyritized east-striking axial zones of tightly folded iron formation. During the year, Placer Dome (CLA) Ltd. dropped its option on the property. In the third quarter of 2004, Fronteer optioned it to Trade Winds Ventures Inc. There are a series of untested geochemical and structural targets on the Sandy Point property that are directly along strike from Trade Wind's High Grade Island property. Trade Winds will be operator.

Swain and Sol d'Or Properties: Red Lake Resources Inc. has vested its 50% interest in the package of properties, which are located in the Casummit Lake and Shabumeni Lake claim map areas. The property consists of the Sol d'Or Mine property, the Swain East property and the Grace Lake property bundled together and optioned to Red Lake Resources Inc. The Sol d'Or property hosts the past producing Sol d'Or Mine with an inferred resource of 8 565 tons of 0.57 ounce Au per ton (Table 9). A 4 km long mineralized corridor, the Mink Lake gold trend, strikes approximately west-northwest and is open both along and across strike. Mineralization consists of gold-bearing quartz-carbonate veins hosted within intensely sheared and altered felsic to intermediate volcanic rocks. A total of 32 km of linecutting and a ground magnetometer survey on the Swain and Sol d'Or properties helped to delineated areas that were tested with 12 diamond drill holes, totalling 1236.11 m (news release, August 6, 2004).

- Cliff Showing: 6 holes, totalling 607 m, intersected a 20-metre wide zone of silica-arsenopyrite alteration. Gold grades were insignificant, however.
- Sol d'Or: 3 holes, totalling 372 m, were drilled to test the No.3 Vein, which had underground development during the 1930s. Silica-arsenopyrite altered metavolcanic rocks were intersected in the current drilling. Significant assays included 1.23 g/t Au over 2.56 m; 2.43 g/t Au over 5.05 m, including 10.5 g/t Au over 0.35 m.
- Beaver Pond: 2 holes, totalling 105 m, were drilled underneath an area in which Fronteer had previously sampled surface copper-gold mineralization from a VMS-style system. Both holes intersected low-grade copper mineralization (0.05% Cu) throughout their entire length. One interval assayed 2.61 g/t Au, 15.6 g/t Ag and 0.74% Cu over 0.5 m.

GOLD CANYON RESOURCES

After an aggressive claim acquisition program during the year, the end of 2004 saw Gold Canyon controlling 167 contiguous claims, totalling 256 units, and 30 patented claims, in the Casummit Lake, Keigat Lake, Seagrave Lake and Satterly Lake claim map areas.

The company completed winter and summer drill programs, totalling 4780 m in 41 holes, testing a number of targets, which focussed on up- and down-rake continuity of high-grade mineralization. The work program included resampling of historical drill-core. Selected assay results are given below. Selected highlights include sections with abundant visible gold.

Hole #	Zone	From (feet)	To (feet)	Interval (feet)	Au (oz/t)
BL-291	East Extension	146.00	149.80	3.80	0.431
BL-292	East Extension	82.00	133.40	51.40	0.370
including	East Extension	118.60	128.70	10.10	1.264
BL-296	East Extension	194.80	196.30	1.50	2.975
BL-293	North Porphyry	372.00	377.00	5.00	0.477
BL-295	East Extension	267.00	271.10	4.10	0.542
including	East Extension	353.50	356.00	2.50	0.727
BL-296	East Extension	282.00	287.00	5.00	0.938
	East Extension	458.00	461.80	3.80	0.208
BL-299		279.20	299.80	20.60	0.161
including		284.30	287.00	2.70	0.425
		328.80	338.00	9.20	0.630
BL-302		91.40	103.40	12.00	0.118
BL-303		25.50	34.00	8.50	0.490
		194.10	209.00	14.90	0.540
BL-304		30.50	60.50	30.50	0.132
BL-319	East Extension	85.50	91.25	5.75	8.648

The company carried out an expanded program of outcrop stripping, channel sampling and combined magnetometer and radiometric airborne (1350 line-kilometres) and ground magnetometer surveys to identify targets for the planned winter 2005 drill program. MMI sampling in the Southwest Target area corresponds with deeply weathered altered rock that assays 0.15 ounces per ton Au. Grab samples from banded iron formation in the Sandy Point and Dole Lake deformation zone returned values up to 0.55 ounces per ton Au (news release, November 10, 2004).

RED LAKE RESOURCES INC.

Red Lake Resources has a number of properties under option in the Birch-Uchi greenstone belt.

Swain–Sol d'Or Property: described under Fronteer Development Group Inc. Red Lake Resources terminated its option on the Swain–Sol d'Or property (Red Lake Resources Inc., news release, October 8, 2004).

Mitchell Dent Property: After evaluating its exploration program, Red Lake Resources terminated its option on the Mitchell Dent property (Red Lake Resources Inc., news release, October 8, 2004).

Wagner Bay–Springpole Property: Work consisted of line cutting, prospecting, geological mapping geophysics and geochemical survey (Red Lake Resources Inc., news release, October 8, 2004).

SABINA RESOURCES LTD.

Sabina has 2 properties in Skinner Township: the **Golden Sidewalk,** which includes the past-producing Bathurst Mine, and the **Skinner** property, purchased from Wolfden. These properties are adjacent and are being explored as one. Work in 2004 consisted of stripping and channel sampling. The Joe Vein is a quartz-carbonate vein hosted in sheared metavolcanic rocks and mineralized with base metal sulphides and rare visible gold. Channel sample results include gold values from trace to 1.06 ounce Au per ton across 0.4 m, 0.272 ounce Au per ton across 0.4 m, 0.194 ounce Au per ton across 0.5 m and weighted average intersections of 2.35 ounce Au across 2.4 m (including 5.665 ounce Au per ton across 0.5m), 0.908 ounce Au per ton across 3.0 m (including 2.516 ounce Au per ton across 1.0 m) and 0.24 ounce Au per ton across 1.5 m (including 0.43 ounce Au per ton across 0.5 m) (Sabina Resources Ltd., news release, November 4, 2004). Planned future work includes line cutting and an induced polarization survey.

SKYHARBOUR RESOURCES LTD.

Skyharbour acquired the **Shabu Lake** property in October 2004, exploration is planned for 2005 (Skyharbour Resources Ltd., news release, October 18, 2004).

TRIBUTE MINERALS INC.

Tribute Minerals has an extensive land package in the area extending from the past producing South Bay Mine (Dent Township) to Highway 105 plus claims at Richardson Lake (Birch–Uchi greenstone belt) and at Bridget Lake in Ball Township (west end of the Red Lake greenstone belt). The land position was acquired through acquisition and an option agreement with Noranda Inc. The company has made extensive use of Titan-24 survey technology to probe to depths of 2000 m. Exploration in 2004 was carried out on 3 of the claim groups of this package.

- **Dixie 19 Property:** 2 diamond drill holes for 1135 m were completed, in addition to bore hole pulse EM. The results extend the Dixie 19 zone a further 50 m to the east and 110 m to depth. Drill hole DX-2004-01 intersected a zone containing stringers and blebs of sphalerite and chalcopyrite grading 1.18% Zn, 0.81% Cu and 26 g/t Ag over 1.3 m (Tribute Minerals Inc., news release, November 30, 2004).
- **Garnet Lake Property (Arrow Zone):** A 4 hole, 2280 m, Phase 1 diamond drill program plus a 3 hole 2037 m phase 2 diamond drill program were carried out. Bore hole pulse EM was completed in about three quarters of the holes. The phase 1 drilling was focussed on targets identified by Quantec Titan-24 surveys. Drilling intersected massive, semi-massive and stringer sulphide zones and up to 50 m of footwall alteration (Tribute Minerals Inc., news release, March 23, 2004). Significant intersections include:

Hole #	From (m)	To (m)	Interval (m)	Zn (%)	Cu (%)	Ag (g/t)	Au (g/t)
GL-2004-04	413.00	425.75	12.75	6.63	0.31	13.20	0.22
including	413.00	418.50	5.50	1.86	0.19	8.06	0.24
and	421.50	425.75	4.25	17.41	0.68	28.00	0.32
including	423.50	425.75	2.25	32.80	1.22	52.27	0.59

A phase 3 diamond drill program was started in December with 2 of 7 holes completed for a total of 658 m. The first of these 2 holes, GL-2004-08 intersected a zone from 307.1 to 335.2 m of mixed stringer, semi-massive and massive sulphides hosted in altered felsic and cherty tuffs. Within this zone, a 10.2 m section assayed 8.50% Zn, 0.95% Cu, 1.00 g/t Au and 24.89 g/t Ag including a 5.8 m section, which assayed 13.89% Zn, 1.11% Cu, 1.13 g/t Au and 37.4 g/t Ag (Tribute Minerals Inc., news release, January 11, 2005).

- **South Bay Property:** The South Bay property comprises 107 claim units in Agnew and Dent townships adjacent to the past-producing South Bay base metal (Zn, Cu) mine. Exploration work in 2004 consisted of an induced polarization (IP) geophysical survey.

Northern Greenstone Belts

Exploration activities in the northern greenstone belts include work carried out in the Berens River and Sachigo subprovinces. Both of these subprovinces consist of relatively small, isolated greenstone belts surrounded by extensive granitic and gneissic terrane. Although numerous mineral occurrences are reported from both the Berens River and Sachigo subprovinces, mineral production has been restricted to 2 mines. Base and precious metals were produced at the Berens River Mine (157 341 ounces gold, 5 676 486 ounces silver, 5 105 873 pounds of lead and 1 797 091 pounds of zinc) and gold from the Sachigo River Mine (52 560 ounces gold) prior to 1950 (Mineral Deposit Inventory 2, MDI53C13SE00011 Berens River). Four companies are known to hold properties in the northern greenstone belts, although they did not perform exploration work in 2004.

ANACONDA GOLD CORP

Anaconda Gold Corp has 4 properties in the Red Lake District:

- **Borthwick:** The property comprises 10 unpatented mining claims and includes the past-producing Berens River Mine.
- **Lingman Lake:** The property comprises 7 contiguous unpatented mining claims that surround the 4 patented claims that cover the mine workings now optioned to Osprey Gold Corp.
- **Gold Hill:** in the North Trout Lake area.
- **Setting Net Lake:** Setting Net Lake area.

CANDOR VENTURES CORP.

Candor has 2 properties with gold and base metal potential: 1) **Shrimp Lake** in the Armstrong Lake claim map area, and 2) **Tahoe Lake** in the Mattson Lake claim map area.

GOLDEYE EXPLORATIONS LIMITED

Goldeye Explorations Limited's **Sandy Lake Property** consists of 220 claim units totalling 36 km^2, located in the Rathouse Bay (Sandy Lake) and Granite Bay of Sandy Lake claim map areas.

SABINA RESOURCES LTD.

Sabina has a joint venture agreement on the **Seeber** property with Wolfden Resources and is planning an exploration program for 2005

RESIDENT GEOLOGIST STAFF AND ACTIVITIES

In 2004, staff of the Red Lake Resident Geologist's office comprised Andreas Lichtblau, Regional Resident Geologist, Carmen Storey, District Geologist and Lynn Kosloski, District Support Geologist. Lynn Kosloski left the ministry at the beginning of December, and Andreas Lichtblau took a position as Acting Regional Land Use Geologist in October. Leah Roy was employed as office assistant in the Summer Experience Program.

Resident Geologist Program staff continued to take part in the Whitefeather Forest Initiative by preparing detailed PSMP for the Whitefeather Area and contributing to several meetings and information sessions.

During the year, C.C. Storey organized the annual Canadian Institute of Mining, Metallurgy and Petroleum Resources (CIMM) Red Lake Branch Exploration Roundup, represented the Red Lake District at the annual Prospectors and Developers Association meeting, and attended the Ontario Exploration and Geoscience Symposium in Toronto. For the 2004 Norseman Festival, C.C. Storey produced a display showing the importance of mining in everyday life, the ore deposits in the belt, and the role of the MNDM.

A. Lichtblau assisted P. Hinz, Kenora District Geologist, teaching the applied Earth Science portion of the Dryden High School Conservation Course, and attended the Ontario Exploration and Geoscience Symposium in Toronto.

A. Lichtblau represented the Red Lake District at the Manitoba Mining and Minerals Convention in Winnipeg.

DRILL CORE STORAGE SITE

The remote diamond-drill core storage compound is located 6 km south of Red Lake, on Highway 105. The compound is operated as a self-serve facility by the Red Lake Resident Geologist's office. The Kenora Drill Core Library houses an additional 14 529.9 m of diamond drill core from the Red Lake District.

In 2004, the remote drill core facility had 15 users. This is a decrease from 2003, but industry visits usually extend over several days, involving examining and relogging core that would be otherwise unavailable.

Diamond drill core was donated to the remote core facility this year by Ansil Resources Ltd. from their Willans Township Property (1 hole, totalling 351 m), which has been added to the collection.

Table 6. Drill core stored at the Red Lake Resident Geologist's District Remote Drill Core Compound.

Company	Property	Township/Area	Length (m)
Ansil Resources Ltd.	Baird Tp	Baird Township	177.9 m
*Ansil Resources Ltd.	Willans Tp	Willans Township	351 m
Asarco Exploration Co. of Canada Ltd.	Skinner, Goodall	Skinner and Goodall townships	444.0 m
Barrick Gold Corporation	Hasaga Mine	Heyson Township	2 889.8 m
Barrick Gold Corporation	Red Lake Gold Shore Mine	Dome Township	106.7 m
Barrick Gold Corporation	Red Lake Gold Shore Mine	Dome Township	257.6 m
Canadian Industrial Minerals Corp.	Bouzon Lake	Heyson Township	2 029.2 m
CAMET Howey and Hasaga Mine Hazards Drilling	Howey-Hasaga	Heyson Township	1 027.2 m
Central Geophysics Ltd.	Conifer Lake Complex	Sumach Lake Area	170.8 m
Cross Lake Minerals Ltd.	Gerry Lake	Gerry Lake Area	981.0 m
East-West Resource Corporation	Bouzan Lake	Heyson Township	1 489.5 m
Freewest Resources Ltd.	McQuaig Property	Dome Township	993.1 m
Hemlo Gold Mines Ltd.	Miles Red Lake	Todd Township	369.3 m
ITL Capital Corp./Rupert Resources Ltd.	Durham-McEwen	Balmer Township	1 682.5 m
Lac Properties Ltd.	Hasaga Mine: Time-Domain Reflectometry (TDR) cables installed in the Crown Pillar	Heyson Township	33.7 m
Loydex Resources Inc.	Bug River	Heyson Township	190 m
Mutual Resources Ltd.	Dixie Lake	Dixie Lake Area	499.3 m
Noramco Explorations Inc.	Various	Ball Township	31 268.6 m
"		Balmer Township	
"		Byshe Township	
"		Dome Township	
"		Fairlie Township	
"		Goodall Township	
"		Honeywell Township	
"		McDonough Township	
"		Ranger Township	
"		Shabumeni Lake Area	
"		Skinner Township	
"		Todd Township	
Noranda Exploration Company Ltd.	Selco Dixie Joint Venture	South of Otter Lake and Karas Lake areas	1 638.2 m
Pure Gold Resources Inc.	McKenzie Island	Dome Township	1 762.4 m
Rio Algom Exploration Co. Ltd.	Fly Lake	Mitchell Township	731.0 m
Skyharbour Resources Ltd.	McKenzie Island	Dome Township	2 081.8 m
Teck Exploration Ltd.	Howey Mine	Heyson Township	7 255.5 m
United Reef Petroleums Limited	Aiken-Russett	Baird Township	8 154.0 m
Western Pacific Energy Corp.	Swain Lake	Goodall Township	1 936.2 m
TOTAL			**68 520.3 m**

* 2004 submission

PROPERTY EXAMINATIONS

Major authorship of the following property examinations is indicated in parentheses following the titles. Table 7 lists the property visits conducted by staff in 2004 in the Red Lake District. There were several additional property visits carried out in the Kenora District that are not listed here. A location map, keyed to the property numbers, is shown in Figures 3, 4, 7, 8 and 9.

Table 7. Property visits conducted by the Red Lake Regional Resident Geologist and staff in 2004.

Number (keyed to Figures 3, 4, 7, 8 and 9)	Property or Occurrence
1	Pakeagama Lake
2	Springpole Lake Gold canyon
3	Berens River Mine
4	Whiteass Lake (local name)
5	Ray Frank Woman Lake claim
6	Bak Lake recon
7	Bathurst Joe Vein
8	Lake Rowan Mine Adit, Todd Township
9	Skinner property
10	Red Crest Mine, Todd Township
11	Tims Creek
12	Spud Rd quartz vein
13	Otter Road Gabbro
14	Sabina Resources core shack: Newman Heyson and Follansbee projects
15	McFinley Mine Rubicon core shack: McFinley project, Bateman Township
16	Cole property
17	Mount Jamie Mine Todd Township
18	Highway 105 recon
19	Cochenour outcrop
20	Madsen Mine
21	Buffalo property
22	West Red Lake

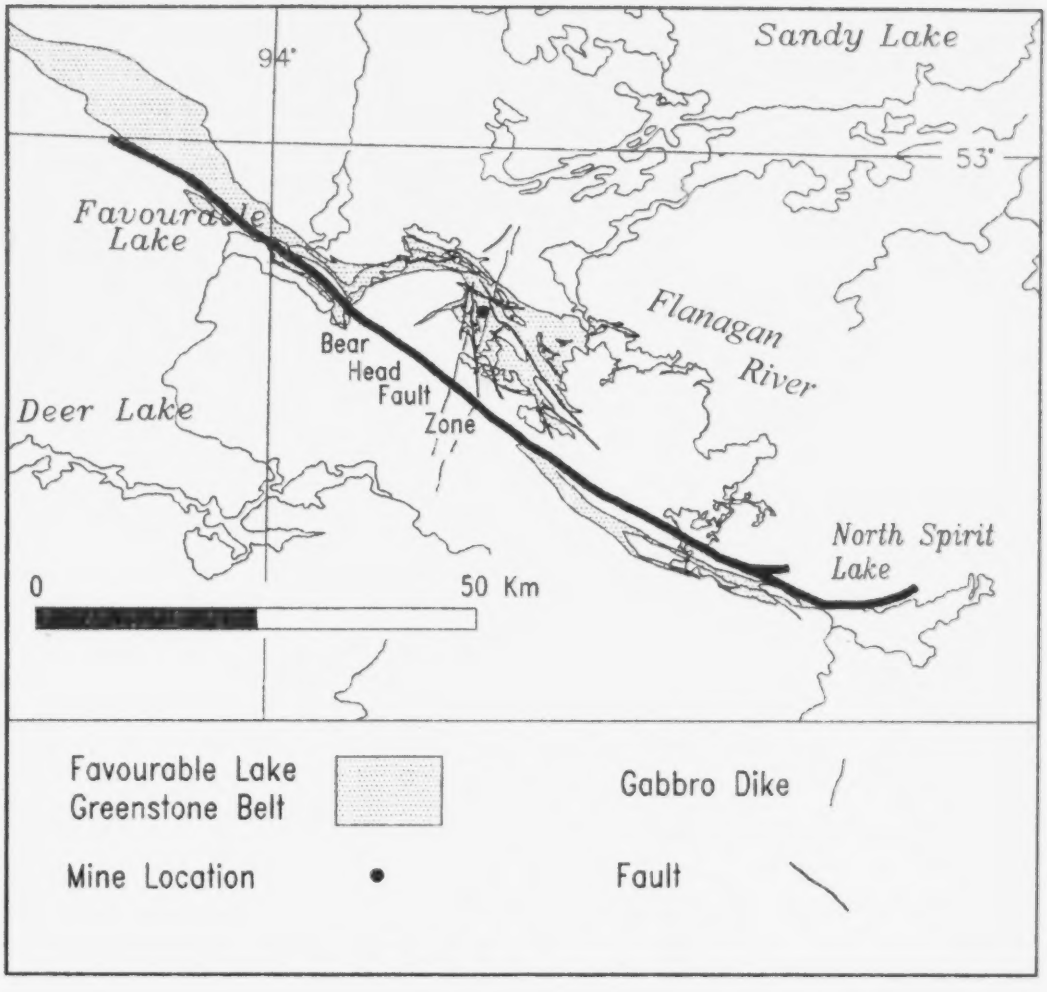


Figure 10. Berens River Mine location map.

Berens River Mine (C.C. Storey)

The Berens River Mine, also known as Zahavy Mine, Favourable Lake Mine and Golsil Mine, is located 3.5 km north of Setting Net Lake, approximately 200 km (124 miles) north of the community of Red Lake. The population centres nearest the site are the First Nations communities of Deer Lake, North Spirit Lake and Sandy Lake. Access to the mine site is by float-equipped aircraft to South Trout Lake (approximately 3 km north of the mine) or by helicopter directly to the mine. There is an abandoned airstrip at the mine site, but its condition is such that it is not presently used for fixed-wing aircraft.

The area has been mapped by Hurst (1930), Ayres (1970) and Stone, Fogel and Fitzsimon (1993). The discovery of the deposit and historic exploration activities, have been described by both Hurst (1930) and Bateman (1939b). Mine production was documented by The Ontario Department of Mines from 1938 to 1948, exploration and development on the site since 1948 has been recorded in assessment work reports on file with the Ontario Ministry of Northern Development and Mines. The history of the mine was compiled from various sources including the Ontario Department of Mines *Annual Reports* 1937 to 1949, assessment work reports on file in the Red Lake Resident Geologist office, *Report of Activities, Resident Geologists* (1988 to 1992), the Mineral Deposit Inventory and the *Canadian Mines Handbook*.

The initial discovery of gold, silver, lead and zinc mineralization was made in 1927 by K. Murray. The Favourable Lake Mining and Exploration Company was organized to explore and develop the property (Hurst 1930). Work consisted of surface stripping and trenching and diamond drilling in 1928 and 1929. Work ceased in 1929. In 1936, the property was taken over by Newmont Mining Company and a subsidiary, Berens River Mines Ltd., was formed to develop the property (Bateman 1939b).

Initial exploration identified 4 east-trending zones. In 1937, a three-compartment shaft was sunk on the Number 1 zone, the most southerly of the four. Underground exploration continued until January 1938 when work stopped and the mine was allowed to flood while the surface plant, a 225 ton per day mill, and town site were constructed. The surface facilities included a hydroelectric power plant on the Duck River (now known as the Flanagan River) at the outlet of Northwind Lake, and a 13.2 km power line to the mine. Access to the mine was by aircraft for personnel and supplies, and by winter tractor train from Berens River Landing on Lake Winnipeg, in Manitoba, for heavy equipment and supplies. The mine operated from 1938 to 1948 and produced 157 696 ounces of gold, 5 796 177 ounces of silver, 6 105 872 pounds of lead and 1 797 091 pounds of zinc from 560 607 tons of ore (Ferguson, Groen and Haynes 1971). Number 1 shaft was developed to a depth of 1898 feet with 17 levels; an internal winze 1100 feet east of the shaft sunk from the 1700 foot level reached 3246 feet with an additional 8 levels. All but 10 000 tons of production came from the Number 1 shaft and all milling was done at the mill located at the Number 1 shaft.

Number 2 shaft was sunk on Number 3 vein and had reached 511 feet circa 1946. Living accommodations consisting of the manager's house, offices, bunkhouses, cookery, recreation facilities and hospital were located north of Number 1 shaft. The workforce at the mine was as high as 200, including miners, mill staff, surface workers and support workers. Precious metal concentrates were flown out and the base metal concentrate was hauled out by tractor train in the winter. Banghart (1940) gives a contemporary description of the construction of the mine and power plant. The mine closed in 1948 and, in 1955, Berens River Mines was dissolved; the claims reverted to the crown in 1959.

W.R. Arrowsmith restaked the property in 1959 along with W.D. Morehouse and Roche Mines Ltd. (later North Rock Explorations Ltd.). Golsil Mines Ltd. was incorporated in 1959 and bought the mine from Arrowsmith et al. Golsil carried out exploration including rehabilitating the Number 2 shaft in 1965 and deepening it to 765 feet by 1967. In 1967, a fire destroyed some of the surface facilities. Golsil changed its name to Zahavy Mines Ltd. in 1971 and Zahavy changed to Xavier Mines Ltd. in 1993 and became more involved in oil exploration changing to Xavier Corporation in 1996. Xavier was delisted from the Toronto Stock Exchange in 1997. Exploration continued with several partners including Ducanex Resources in 1971, Eastwest Resources Ltd. 1974–76, Getty Canadian Metals Ltd. 1980–87 and Noramco Mining Exploration 1988–89. The airstrip was built using waste rock and tailings in 1982 (Coll 1982). The strip passes just north of the Number 1 shaft and ends on tailings. Work on the property ceased in 1989 and the site ultimately reverted to the crown. The mine site was staked in November 2002 and is now part of a 1696 ha claim group referred to as the Borthwick Lake project held by Anaconda Gold Ltd. (*see* "Anaconda Gold Ltd.").

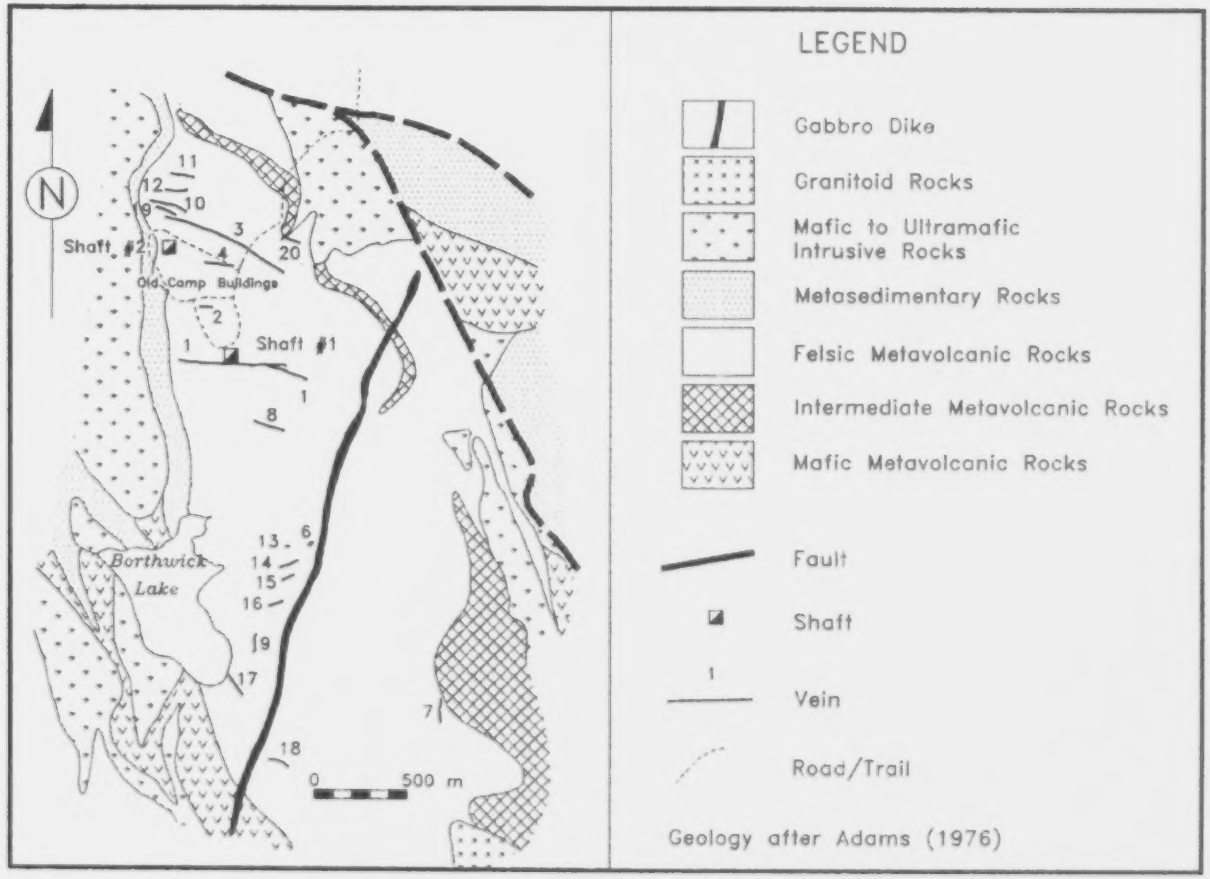


Figure 11. Berens River Mine property: geology and vein locations.

GEOLOGY

The mineralization is hosted in metavolcanic rocks of the Favourable Lake greenstone belt of the Sachigo Subprovince. Ayres (1970) mapped the area of the mine as felsic lapilli tuff and tuff breccia. The rock units strike northerly and dip steeply to the east in the vicinity of the Number 1 shaft; bedding in these rocks is quite variable in orientation. A narrow unit of clastic metasedimentary rocks separates the felsic volcanic rocks from a dioritic to gabbroic intrusion to the west. The Setting Net Lake batholith is west of this mafic intrusion. Mapping by Stone, Fogel and Fitzsimon (1993) shows a similar setting. North-northeast-striking Proterozoic gabbro dikes of the Molson swarm are exposed east of the mine (Stone 1998b). Figure 10 shows the location of the mine and Figure 11 illustrates the general geology of the mine property.

The rocks have been dissected by north-trending faults that extend from South Trout Lake through Setting Net Lake, and east-trending faults of shorter strike length. The regional Bearhead Fault zone passes to the south of Setting Net Lake (Stone, Fogel and Fitzsimon 1993). Thurston, Osmani and Stone (1991) recognized 5 assemblages of metavolcanic and metasedimentary rocks in the Favourable Lake greenstone belt; all are fault bounded. Of the 5, the Setting Net assemblage (Cycle 2 of Ayres 1977) is the most extensive and hosts the Berens River Mine mineralized zones (geological reports of Getty Metals refer to Cycle 2). The Setting Net assemblage is the oldest at 2926 Ma, and is comprised of komatiite-bearing unit, succeeded by shallow water metasedimentary units (marble, chert, siltstone, sandstone), followed by andesitic to dacitic stratovolcanic pyroclastic deposits, dacitic pyroclastic rocks, flows and breccia followed by proximal sandstones, conglomerates and, finally, thin-bedded chert-argillite-iron formation (Thurston, Osmani and Stone 1991).

The entire assemblage is 2.3 km thick. Thurston, Osmani and Stone imply that this represents an oceanic sequence followed by a shield volcano with a caldera structure filled by dacitic pyroclastic rocks and topped by clastic metasedimentary rocks. The mine host rocks are the dacitic pyroclastic rocks. Metamorphic grade of the Favourable Lake greenstone belt ranges from middle greenschist in the central part of the belt to middle almandine amphibolite and hornblende hornfels facies near the granitoid intrusive rocks flanking the belt (Winter 1988). The grade in the vicinity of the mine is reported as greenschist (*see also* Thurston, Osmani and Stone 1991, Figure 5.21). Adams (1976) subdivided the rocks on mine property into the Caldera sequence of felsic to intermediate pyroclastic rocks, flows and intrusive breccia and the Mine Sequence of clastic, tuffaceous and chemical sediments. All the economic mineralization reported (to 1976) is found in the Caldera Sequence (Adams 1976).

MINERALIZATION

The mineralization has been described in some detail by Adams (1976), Bateman (1939b), Oliver (1949) and Keys (1948). Two types of mineralization have been identified on the Berens River Mine property: quartz-actinolite-sulphide veins containing gold and silver, and a stratiform pyrrhotite-pyrite body in the Number 2 shaft vicinity (Adams 1976). All mine production was from the former type. The quartz-actinolite veins are fracture controlled and strike easterly at the mine workings to northeast in the southern area near Borthwick Lake. The veins dip 65° to 70° south or southeast. Descriptions of the vein structures are limited to the Number 1 and Number 3 vein zones that were explored underground and are after Bateman (1939b) and Keys (1948). The veins range in width from 15 cm to 4.5 m, often showing pinch and swell, and have strike lengths of several hundred metres.

The veins have been cut by numerous minor faults with displacements of a few centimetres to several metres as well as a number of northwest-striking reverse or thrust faults with a dip of less than 50° NE (Bateman 1939b). These faults have displaced the veins so that the ore is almost vertical although the veins dip to the south. Bateman describes the ore shoots of the Number 1 zone as "between 60 and 350 feet long and range from 3 to 25 feet in width." Keys (1948) mentions narrow faults "marked by thin seams of fine-grained black opaque material" that seem to be analogous to the 'black line faults' found in the Red Lake gold deposits, and described by Dubé, Williamson and Malo (2003).

Gangue minerals include both sugary and glassy quartz, actinolite, calcite, chlorite, biotite plus accessory spessartite and tourmaline. The sulphide minerals in order of abundance (*after* Bateman 1939b, Adams 1976 and Oliver 1949) include pyrite, sphalerite, galena, pyrrhotite, chalcopyrite, tetrahedrite, dyscrasite, native silver, ruby silver and gold plus traces of arsenopyrite, native antimony and bornite. A small amount of native silver is present, but there is no visible gold.

Adams (1976) mentions a sulphide horizon associated with cherty metasediments near shaft Number 2. This horizon consists of pyrrhotite, pyrite, chert and carbonate, as intercalated sulphide and chert or nearly massive pyrite and pyrrhotite. The precious and base metal content of this unit is minimal (Adams 1976). Adams places this unit in the basal part of the mine formation and likens it to 'sulphide facies iron formation', or, in more modern terms, an exhalite horizon. Ayres (1974) describes similar mineralization from parts of the Favourable Lake belt north of the mine.

In addition to the 4 major vein systems (Number 1 to Number 4), there are a large number of lesser veins that have been examined and sampled at various times over the history of the mine. Figure 11 shows the location of some of these veins. Surface and underground exploration primarily concentrated on vein systems 1, 2, 3, and 4. The exploration work done by Zahavy Mines Ltd. with various partners is available in the assessment files at the Red Lake Resident Geologist's office. Reports by Coll (1982), Bevan (1983), George (1987), Winter (1988) and McKay, Cullen and Nelson (2002) present data on the gold, silver, lead, zinc and copper assays from sampling of diamond drill core, underground workings and the numerous surface showings. The exploration work for Getty Canadian Metals Ltd. is the most extensive, and includes a limited amount of overburden sampling plus sampling of the old tailings ponds in 1982 prior to expansion of the airstrip.

Various workers have estimated the ore reserves remaining on the property. Bevan (1983) calculated the following for the Number 3 zone: 982 213 tons grading 0.26 ounce Au per ton, 4.8 ounce Ag per ton, 0.77% Pb, 1.12% Zn (713 249 tons indicated, 268 964 tons inferred) at 0.15 ounce Au per ton cutoff grade to 750 m level. In the 1960s, Golsil Mines Ltd. estimated the Number 1 zone contained 75 000 tons grading 0.1 to 0.12 ounce Au per ton, and 4.0 to 5.0 ounce Ag per ton (Golsil Mines Ltd. quoted in Mineral Deposit Inventory). None of these estimates are known to conform to the standards of National Instrument 43-101, however, they do indicate the presence of significant gold, silver and base metal mineralization.

The Berens River Mine is an attractive exploration target, as is the entire Favourable Lake greenstone belt. The property shows widespread mineralization and has the potential to contain lode gold and base metal polymetallic deposits. The presence of an apparent exhalite type horizon raises the possibility of undetected volcanogenic sulphide mineralization in this part of the Setting Net assemblage.

RECOMMENDATIONS FOR EXPLORATION

Over 25 million ounces gold have been produced from the Archean Uchi Subprovince over the past 75 years. This volcano-plutonic belt is exposed for over 650 km, from Rice Lake in the west, through the Red Lake, Birch–Uchi, Pickle Lake and Fort Hope greenstone belts of northwestern Ontario. The bulk of gold production (over 16 million ounces) has come from the Campbell–Red Lake deposit, being currently mined by Placer Dome (CLA) Ltd. and Goldcorp Inc.

Intense exploration work is being carried out on properties which contain any of the elements believed to be key guides to ore. Explorationists should take note of recommendations by Dubé, Williamson and Malo (2003), which stress the importance of **proximity to the regional unconformity** and, with an analogy to the Temiskaming-style unconformity in the Timmins gold camp, **the potential of the unconformity itself** to host significant gold deposits.

Gold In South-Central Red Lake Greenstone Belt

The greater than 2.4 million ounce Madsen gold deposit is located within the high-temperature, calc-silicate metamorphic aureole of the Killala–Baird batholith and is interpreted (Dubé et al. 2000) to possibly be a high-temperature disseminated-replacement-style gold skarn deposit hosted in mafic rocks. Individual ore lenses are localized within a unit historically referred to as the "Austin Tuff". This unit can been described as, in part, a hydrothermally altered and heterogeneously deformed mafic volcaniclastic, epiclastic and locally mafic volcanic rock that is within or adjacent to an unconformity between Mesoarchean (ca. 2990 Ma) Balmer assemblage and overlying Neoarchean (ca. 2740 Ma) Confederation assemblage (Dubé et al. 2000). **All major deposits of the camp (Campbell-Red Lake, Cochenour and Madsen) occur within Mesoarchean rocks a few hundred metres below this regional unconformity.**

In the southern portion of the Red Lake belt, the unconformity has been traced from its southwestern limits, where it is cut by the Killala–Baird batholith near the Starratt Olsen Mine, through Madsen and Snib Lake to the Howey

Mine in Red Lake, a distance of approximately 12 km; further east, exposures are covered by the waters of Howey Bay. For approximately 9 km, from the Starratt Olsen Mine to Snib Lake, the unconformity lies within the metamorphic aureole of the Killala–Baird batholith, which was recommended by Parker (2000) as highly prospective for skarn-associated Madsen-style gold mineralization. Portions of the area are currently held by Placer Dome (CLA) Ltd., under its Madsen option agreement with Claude Resources, Golconda Resources Ltd. and Solitaire Minerals Corp. In recent years, only grassroots-style exploration work has been done in the area west of Starratt Olsen: **several kilometres of prospective strike extent remain to be followed-up by more intensive geophysical and geochemical surveys and diamond drilling.**

The Madsen–Snib Lake area lies wholly within the "Transition Zone", defined by Thompson (2003) on the basis of metamorphic mineralogy, as lying between the Upper Greenstone and Lower Amphibolite zones, which he interprets as a zone significantly enhanced for gold mineralization. In addition, this area is underlain by locally intense ferroan-dolomite altered mafic and ultramafic rocks manifested as areas of pervasive silicification and potassic metasomatism in the form of biotite and sericite, which are accompanied by thick ferroan-dolomite extension veins (Parker 2000), and includes several historic gold occurrences. Current work by Placer Dome on its Madsen option (*see* "Placer Dome (CLA) Ltd.") has focussed on the Treasure Box zone, approximately 2 km from the unconformity. Ground closer to the unconformity (e.g., historic Nova–Co, My–Ritt and Newman–Heyson properties) is being actively worked as the Newman–Madsen joint venture between Wolfden Resources Inc. and Sabina Resources Ltd. (*see* "Wolfden Resources Inc."). **Within ferroan-dolomite altered mafic footwall rocks, the potential for significant gold mineralization may increase with proximity to the unconformity.**

A folded segment of the unconformity has also been traced along the islands and southern shore of Red Lake, to where it is terminated by the western contact of the Dome stock (Sanborn-Barrie, Skulski and Parker 2004). Footwall rocks are characterized by proximal ferroan-dolomite altered mafic and ultramafic flows hosting numerous historic gold occurrences (e.g., Redaurum, Paulore). Placer Dome (CLA) Ltd., Goldcorp Inc., Rubicon Minerals Corporation and Skyharbour Developments Ltd. have recently performed work, including diamond drilling, on their respective properties in the area.

Gold in the Northeast Portion of the Red Lake Greenstone Belt

The Goldcorp Inc.–Planet Exploration Inc. joint venture continues to discover previously unknown styles of gold mineralization on their Sidace Lake property in the Coli Lake Area of the Red Lake greenstone belt. The "Skarn Zone" at Upper Duck Lake (previously called "South Zone") hosts gold mineralization within skarn-type alteration (epidote-garnet, diopside-calcite) approximately 1 km south of the Main Discovery (*see* "Planet Exploration Inc."). The Main Discovery is hosted by quartz-sericite schist, where gold is sometimes locally associated with molybdenite, arsenopyrite, realgar, stibnite, cinnabar and with green mica (Planet Exploration Inc., news release, June 16, 2004).

The Coli–Sidace lakes area is underlain by an amphibolite-grade sliver of greenstone, approximately 2 km wide, lying within the thermal aureoles of the Little Vermilion Lake batholith to the west and the Walsh Lake pluton (a marginal phase of the Trout Lake batholith) to the east. Previously unknown skarn-type mineralogy encountered in drilling on the Planet ground indicates either metasomatism of primary carbonate-rich chemical sediment (e.g., interflow dolomite or limestone); carbonate-altered volcanic or intrusive rocks; or massive carbonate veins. Calc-silicate mineralogy has been previously documented in ferroan-dolomite altered mafic rocks adjacent to the Walsh Lake pluton in Bateman Township (Parker 2000).

The Madsen area hosts excellent examples of skarn-type alteration of previously highly carbonatized mafic and ultramafic rocks. The past-producing Starratt Olsen and Madsen mines are localized in an amphibolite-grade greenstone wedge, approximately 4 km wide, between the Killala–Baird batholith to the north and the Faulkenham stock to the south. While few petrographic studies of lithologies of the Madsen area have been made, Butler (1955) recognised orpiment altering realgar in a specimen from Madsen. The realgar was observed to be closely associated with arsenopyrite in ore from a stope on the 2nd Level.

The Sidace Lake and Madsen areas show similarities in their relatively high metamorphic grade and in the skarnification of previously carbonatized or carbonate-rich rocks. In addition, both areas appear to have some

similarities in a unique, and rare, mineralogy with signif cant associated gold. It may be that some environments of gold mineralization in the Coli Lake–Sidace Lake area are related to high-temperature skarn-type deposit, as interpreted for the >2 million ounce Madsen Mine. The possibility of a multi-million ounce gold deposit at Coli Lake–Sidace Lake can therefore not be discounted.

Lode Gold in Felsic Plutons

Felsic to intermediate stocks and dikes, including quartz and plagioclase phyric porphyries, are associated with a number of gold occurrences and deposits in the Red Lake greenstone belt. A total of approximately 640 000 ounces gold were produced at the Howey and Hasaga mines from quartz veins in a sheared quartz porphyry dike. Close to 700 000 ounces gold were produced from the McKenzie granodiorite stock. On the Wilmar portion of the Cochenour property and at the Abino occurrence, small granodiorite to trondhjemite intrusions contain gold mineralization. Over half of the known gold occurrences in the belt have associated quartz porphyry stocks or dikes.

Several historic gold occurrences and 4 past producers (McKenzie Red Lake Mine, Gold Eagle Mine, Buffalo and Red Lake Gold Shore Mine) are spatially associated with the Dome stock and McKenzie Island stock. Both have a granodiorite composition and have U/Pb ages of 2718 to 2720 Ma, respectively. Current exploration work by Southern Star Resources (*see* "Southern Star Resources Inc.") and Sabina Resources (*see* "Sabina Resources Ltd.") have discovered gold mineralization in underexplored parts of both the Dome and McKenzie Island stocks. In the case of the Gold Eagle Mine, a preliminary resource estimate of 309 000 tonnes of 16.67 g/t Au (uncut) has been outlined (Pressacco 2004). Blackburn et al. (1999) described the known mineralization in the Dome stock and concludes that the stock is highly prospective for gold. The Dome and McKenzie Island stocks and other internal granitoid intrusive bodies in both the Red Lake and Birch–Uchi greenstone belts are possible targets for gold exploration.

Base Metals

Volcanogenic massive sulphide (VMS) deposits and prospects, and associated proximal chloritic and alumino-silicate alteration, are well documented in the Red Lake, Birch–Uchi and Confederation greenstone belts hosted in Confederation assemblage rocks. Confederation assemblage rocks are exposed on the eastern and southern flank of the Birch–Uchi greenstone belt, the area between the Red Lake and Birch–Uchi greenstone belts and both the southern edge and northern edge of the Red Lake greenstone belt.

Tribute Minerals Inc. has successfully employed the Titan-24 MT/IP system on their Dixie and Ben Lake properties in Confederation assemblage (*see* "Tribute Minerals"). FII-type and FIII-type rhyolites occur throughout a 100 km band extending east from Red Lake to the past-producing South Bay Mine (1.6 million tons grading 11.06% Zn, 1.8% Cu and 2.12 ounces Ag per ton). World-class deposits, such as the Mattabi and Geco, are associated with FII-type rhyolite; the Kidd Creek deposit is associated with FIII-type rhyolite. A heightened awareness now exists in the Red Lake District of the potential of discovery of a major base metal sulphide deposit. In particular, the area mentioned, between Red Lake and South Bay Mine, is of prime exploration potential, but the other areas of Confederation assemblage rocks deserve attention to locate FII- and FIII-type rhyolites and possible VMS-type mineralization.

Copper-nickel has not been produced from the Red Lake or Birch–Uchi greenstone belts, but copper-nickel (and associated PGE) mineral occurrences have been reported from several mafic intrusive bodies. Sanukitoid-type intrusive bodies have been identified in the Red Lake greenstone belt (Faulkenham Lake stock, Sanborn-Barrie, Skulski and Parker 2004) and in some parts of the Berens River and Sachigo subprovinces to the north (Stone 1998a, 2005). Their potential to host copper-nickel-PGE mineralization is unknown at the present.

Molybdenum and Uranium

Recent price increases for these 2 commodities has evoked renewed interest on the part of the exploration industry. There has now been some staking and data compilation activity directed at molybdenum and uranium occurrences associated with granitoid rocks in the Red Lake District. There are numerous reported molybdenum and uranium occurrences along the Bearhead Fault between the Sachigo and Berens River subprovinces (Ayres 1970, Ayres et al.

1973, Stone 1998b). There is a reported molybdenum resource in the Setting Net Lake area (*see* Table 10). There has been no exploration activity towards these commodities for many years. The Setting Net Lake area is highly prospective for both commodities. Molybdenum is also reported from the north side of the Lingman Lake greenstone belt, the east side of the Birch–Uchi greenstone belt at the southeast corner of McNaughten Township and at Senior Lake and near Fawthrop Lake.

OGS ACTIVITIES AND RESEARCH BY OTHERS

Publications received in the Red Lake Resident Geologist Office during 2003 are listed in Table 9. Kenneth Williamson continued his PhD work at the Goldcorp Inc. Red Lake Mine.

Table 8. Publications received by the Red Lake Office in 2004.

Title	Author	Type and Year of Publication
Graphite in the Central Gneiss Belt of the Grenville Province of Ontario	M.I. Garland	Ontario Geological Survey, Open File Report 5649, 1987
Report of Activities 2003, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts	A. Lichtblau, P. Hinz, C. Ravnaas, C.C. Storey, L. Kosloski and A. Raoul	Ontario Geological Survey, Open File Report 6127, 2004
Report of Activities 2003, Resident Geologist Program, Thunder Bay Regional Resident Geologist Report: Thunder Bay North District	M.C. Smyk, G.D. White, M.A. Magee and C. Komar	Ontario Geological Survey, Open File Report 6128, 2004
Report of Activities 2003, Resident Geologist Program, Thunder Bay Regional Resident Geologist Report: Thunder Bay South District	B.R. Schnieders, J.F. Scott, M.S. O'Brien, M.A. Magee and C. Komar	Ontario Geological Survey, Open File Report 6129, 2004
Report of Activities 2003, Resident Geologist Program, Timmins Regional Resident Geologist Report: Timmins and Sault Ste. Marie Districts	B.T. Atkinson, M. Hailstone, G.Wm. Seim, A.C. Wilson, D.M. Draper, S. Butorac and G.R. Cooper	Ontario Geological Survey, Open File Report 6130, 2004
Report of Activities 2003, Resident Geologist Program, Kirkland Lake Regional Resident Geologist Report: Kirkland Lake District	G. Meyer, G.P.B. Grabowski, D.L. Guindon and E.C. Chaloux	Ontario Geological Survey, Open File Report 6131, 2004
Report of Activities 2003, Resident Geologist Program, Southern Ontario Regional Resident Geologist Report: Southeastern and Southwestern Ontario Districts, Mines and Minerals Information Centre, and Petroleum Resources Centre	P.J. Sangster, D. Farrow, V.C. Papertzian, C. Lee, M. Barua, D.A. Laidlaw, D. Hemmings and T.R. Carter	Ontario Geological Survey, Open File Report 6132, 2004
Report of Activities 2003, Resident Geologist Program, Regional Land Use Geologist Report: Northwestern, Northeastern and Southern Ontario Regions	R.L. Debicki, A.P. Drost, R.J. Fraser, D.J. Rowell and G.R. Yule	Ontario Geological Survey, Open File Report 6133, 2004
Report of Activities 2003, Resident Geologist Program, Kirkland Lake Regional Resident Geologist Report: Sudbury District	M. Cosec, J.M. Gaudreau, J.B. Selway and S.A. Beauchamp	Ontario Geological Survey, Open File Report 6139, 2004
Mineral Deposit Inventory Version 2 (MDI2)		Ontario Geological Survey, October 2004 Release, 2004
Demonstration Surveys of the Distributed Acquisition (MT/IP) Method Earth Imaging Technonology	Quantec Geoscience Limited	Ontario Geological Survey, Miscellaneous Release—Data 139 (Volumes 1 to 3), 2004
Detailed geology, hydrothermal alteration and gold mineralisation of the Cochenour stripped outcrop, Red Lake gold district, Ontario	P.K. Williamson and B. Dubé	Geological Survey of Canada, Open File 1673, 2003
Geology and tectonostratigraphic assemblages, West Uchi map area, Manitoba and Ontario	A.H. Bailes, J.A. Percival, M.T. Corkey, V.J. McNicoll, K.Y. Tomlinson, C. Sasseville, N. Rogers, J.B. Whalen and D. Stone	Geological Survey of Canada, Open File 1522; Manitoba Geological Survey, Open File OF2003-1; Ontario Geological Survey, Preliminary Map P.3461, scale 1:250 000, 2003
Geology, Tectonometamorphic Map of Ontario, Canada and parts of the Untied States of America	R.M. Easton and R.G. Berman	Geological Survey of Canada, Open File 1810; Ontario Geological Survey, Preliminary Map P.3533, scale 1:1 500 000, 2004

Diabase dyke swarms and related units in Canada and adjacent regions	K.L. Buchan and R.E. Ernst	Geological Survey of Canada, Map 2022A and accompanying notes, 2004
Geology and Tectonostratigraphic Assemblages, East Uchi Subprovince, Red Lake and Birch-Uchi belts	M. Sanborn-Barrie, N. Rogers, T. Skulski, J. Parker, V. McNicoll and J. Devaney	Geological Survey of Canada, Open File 4256; Ontario Geological Survey, Preliminary Map P.3460, scale 1:250 000, 2004
Geology, Confederation Lake, Ontario	N. Rogers	Geological Survey of Canada, Open File 4265, compilation at 1:50 000, 2004
Geology, Red Lake greenstone belt, western Superior Province, Ontario	M. Sanborn-Barrie, T. Skulski, and J. Parker	Geological Survey of Canada, Open File 4594, scale 1:50 000, 2004
Geology, Bee Lake Greenstone Belt, Ontario-Manitoba	N. Rogers	Geological Survey of Canada, Open File 4315, compilation at 1:50 000, 2004
A Preliminary Overview of Canada's Minerals Resources	J.W. Lydon, W.D. Goodfellow, B. Dubé, S. Paradis, W.D. Sinclair, L. Corriveau, and P. Gosselin	Geological Survey of Canada, Open File 4668, 2004
Compilation of Soil and Till Geochemical Metadata for Canada	W.A. Spirito, A.N. Rencz, I.M. Kettles, S.W. Adcock, and A.P. Stacey	Geological Survey of Canada, Open File 4703, 2004
Report of Activities 2004	Manitoba Industry, Economic Development and Mines	Manitoba Geological Survey, 2004
Superior province: A billion year record of Archean craton evolution and the birth of plate tectonic processes	J.A. Percival	Geological Association of Canada Howard Street Robinson Distinguished Lecture 2003, 2003
Preliminary results of geochemical sampling from the Mesoarchean Balmer assemblage, Birch-Uchi greenstone belt	R. Metsaranta	Unpublished BSc(Hons) thesis, Lakehead University, 2003
Analysis of Pebble Shape Fabrics in the Central Western Part of the Confederation Lake Greenstone Belt, Red Lake Region, NW Ontario	H. Moslehi	Unpublished MSc thesis, University of Toronto, 2000
Gold Mineralization at the Campbell Mine, Red Lake Greenstone Belt, Uchi Subprovince, Ontario	C.A. Tarnocai	Unpublished PhD thesis, University of Ottawa, 2001
The Eastern Outlets of Lake Agassiz	L.H. Thorleifson	Unpublished MSc thesis, University of Manitoba, 1983
Tourmaline in Petalite-Subtype Granitic Pegmatites: Evidence of Fractionation and Contamination From the Pakeagama Lake and Separation Lake Areas of Northwestern Ontario, Canada	A.G. Tindle, F.W. Breaks and J.B. Selway	The Canadian Mineralogist, Volume 40, Part 3, p.753-788, 2002
Dancing with a Ghost – Exploring Indian Reality	R. Ross	Octopus Publishing Group, 1992
Breaking New Ground – Mining, Minerals, and Sustainable Development		International Institute for Environment and Development and World Business Council for Sustainable Development, 2002
A Guide to Mineral Deposits of the Northwest Territories	Edited by Pattie Beales	Minerals, Oil and Gas Division, Department of Resources, Wildlife and Economic Development, Government of the Northwest Territories, November 2003
Report of Environmental Assessment and Reasons for Decision on the De Beers Canada Mining Inc. Snap Lake Diamond Project		Mackenzie Valley Environmental Impact Review Board, July 24, 2003
Geology and Origin of Copper-Nickel Sulphide Deposits of the Bird River Area of Manitoba	A.P. Juhas	Unpublished PhD Thesis, University of Manitoba, 1973
Geology and Tectonostratigraphic Assemblages, Eastern Sachigo Subprovince, Ontario and Manitoba	D. Stone, M.T. Corkery, M.T. Hallé, J. Ketchum, M. Lange, T. Skulski, and J. Whalen	Geological Survey of Canada, Open File 1582; Ontario Geological Survey, Preliminary Map P 3462, Manitoba Geological Survey Map MAP2004-1, scale 1:250 000, 2004

Table 9. Mineral deposits not being mined in the Red Lake District in 2004.

Abbreviations

AF	Assessment Files	MLS	Mining Lands, Sudbury
CMH	*Canadian Mines Handbook*	MR	Mining Recorder
GR	Geological Report	NM	*The Northern Miner*
MDC	Mineral Deposit Circular	OFR	Open File Report
MDIR	Mineral Deposit Inventory record	PC	Personal Communication

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status
Abino Bateman, Balmer and Dome Townships (52N/04SW)	Au	Total Granodiorite Zone: drill indicated tonnage 405 162 tons 0.203 opt Au from three sub-zones	AF (McClean 1976)	Patent
Aiken–Russet Baird Township (52K/13NW)	Au	Total reserves of 102 555 tons of 0.22 opt Au	AF (Kuryliw 1967)	Patent
Alcourt (Copper Man, Hanson–Campbell) Fairlie Township (52N/04SW)	Au	Reserves: 20 000 tons of 0.45 opt Au from 1959-60 diamond drilling No. 1 vein: 17 000 tonnes of 0.2429 oz per tonne Au from 1959-60 diamond drilling and 1981 sampling program	AF (Tilsley 1981)	Patent
Annco Mine Dome Township (52N/04SW)	Au	Reserves: 50 000 tons of "Excellent Grade" (0.35 opt Au?)	Energy Mines and Resources Canada 1989	Patent
Bathurst Mine Skinner Township (52N/07SW)	Au	Reserves: 80 000 tons of 0.587 opt Au	Energy Mines and Resources Canada 1989	Leased
Bearhead Lake Prospect 53C/12NW	U_3O_8	Reserves: 978 810 tons of 0.06% U_3O_8 to a depth of 500 feet	MDC 25 (Robertson and Gould, 1983)	Staked Claim
Berens River Mine (Golsil, Zahavy) (53C/13SE)	Au, Ag, Pb, Zn	Reserves: No. 1 Zone: 75 000 tons of 0.1-0.12 opt Au, 4.0-5.0 opt Ag No. 3 Zone: 982 213 tons of 0.26 opt Au, 4.8 opt Ag, 0.77% Pb, 1.12% Zn (713 249 tons indicated, 268 964 tons inferred) at 0.15 opt Au cut-off to 750 metre level	AF (Bevan 1983)	Staked Claim
Bluffy Lake (52K/14SE)	Fe	Reserves: 21 000 000 tons at 22.86% Fe	Prelim. Map P.1199 (Breaks et al. 1976)	Licence of Occupation
Borland Lake (53D/16NE)	Ag, Au	Probable Reserves: 502 412 tons of 8.09 opt Ag and 0.02 opt Au	Massive Resources Ltd. Preliminary Prospectus - August 6, 1987	Open
Buffalo Red Lake Heyson Township (52N/04SW)	Au	Reserves: 421 728 tonnes of 0.139 opt Au drill indicated in 1980	AF (Kita 1988)	Patent
Cochenour–Willans Mine Dome Township (52N/04SW)	Au	Reserves: Proven and probable 173 000 tons of 0.51 opt Au, possible reserves 274 000 tons of 0.59 opt Au	NM - Dec. 12, 1994 p.7	Patent, Licence of Occupation
Cole Gold Mine Ball Township (52M/01SE)	Au	Reserves: 119 780 tons of 0.41 opt Au probable and indicated	AF (Wilton 1973)	Patent, Licence of Occupation
Consolidated Marcus Dome Township (52N/04SW)	Au	Reserves: 60 000 tons of 0.18 opt Au	Energy Mines and Resources Canada 1989	Patent
Copper Lode A–Rexdale Group Prospect (52K/15NW)	Cu, Ag	Reserves: 236 424 tons of 1.94% Cu, 1.22 opt Ag or 425 612 tons of 1.56% Cu, 0.98 opt Ag or 854 007 tons of 1.01% Cu, 0.57 opt Ag	AF (Archibald 1970) MP 152 (Atkinson et al. 1990b)	Staked Claim

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status
Copper–Lode D Belanger Township (52K/15NW)	Cu, Zn	Reserves: 36 000 tons of 0.26% Cu, 7.58% Zn	AF (MacDougall 1996)	Leased
Copper–Lode E Belanger Township (52K/15NW)	Cu, Ag	Reserves: 160 000 tons of 8.28% Zn, 1.02% Cu, 0.39 opt Ag	AF (Archibald 1970)	Leased
Dixie Creek (52K/13SE)	Au	Reserves: 500 000 tons of 0.12 opt Au	MDIR	Staked Claim
Dixie 3 Prospect (52K/14NW)	Cu, Zn	Reserves: 91 000 tons of 10.0% Zn, 1.0% Cu	AF (MacDougall 1995)	Leased - Mining Rights Only, Staked Claim
Dixie 18 Prospect (52K/14NW)	Zn	Reserves: 110 000 tons of 0.5% Cu, 12.5% Zn, 0.57 opt Ag	AF (King and Petrie 1998)	Staked Claim
Grassett Prospect Earngey Township (52N/02SE)	Au	Reserves: 78 295 tons of 0.22 opt Au (Part of the Hill–Sloan–Tivy Vein)	Energy Mines and Resources Canada 1989	Patent
Griffith Mine (52K/14SW)	Fe	Reserves: 120 000 000 tons of 29% Fe	GR82 (Shklanka 1970)	Withdrawn from staking
Hasaga Mine Heyson Township (52N/04SW)	Au	Reserves: C Block (below 1800 feet) - 200 203 tons of 0.192 opt Au (Ferguson 1968) Stopes - 41 430 tons of 0.104 opt Au Pillars - 6 365 tons of 0.134 opt Au	GR56 (Ferguson 1968)	Patent
Hill–Sloan–Tivy Earngey Township (52N/02SE)	Au	Reserves: 296 000 tons of 0.219 opt Au (Grassett Prospect Reserves may be included in total)	AF (Germundson 1995)	Patent
Horseshoe Island (52N/08NW)	Au	Reserves: 893 508 tons of 0.14 opt Au	Northwest Prospector, March/April 1990, p.27	Staked Claim
Howey Mine Heyson Township (52N/04SW)	Au	Reserves: 780 000 tons of 0.08 opt Au	Energy Mines and Resources Canada 1989	Patent, Licence of Occupation
Jackson–Manion Mine Dent Township (52N/02SE)	Au	Reserves: 40 000 tons of 0.5 opt Au	NM - March 14, 1985, p.21	Patent
Joy–New Zone (Diamond Willow Zone, Creek Zone) (52K/14NW)	Cu, Zn	Reserves: 300 000 tons of 4% combined Cu-Zn	AF (Lewis 1994)	Staked Claim
Kesaka Lake (52K/16NW)	Fe	Reserves: 312 500 000 tons of 31.1% Fe to a depth of 100 feet	MRC11 (Shklanka 1968)	Open, Staked Claim
Laverty (Thrall) Heyson Township (52N/04SW)	Au	Reserves: Speculative reserves from the Diabase dike zone: 329 000 tons of 0.08 opt Au or 75 000 tons of 0.15 opt Au	AF (Gillies 1982)	Patent
Lingman Lake (53F/15SW)	Au	Reserves: 1 172 753 tons of 0.20 opt Au in all zones at 5.0 foot minimum width and a cut-off grade of 0.08 opt Au	AF (McPhee 1989)	Patent
Madsen Mine Baird Township (52K/13NW)	Au	Measured & Indicated Mineral Reserves: 282 000 ounces Au Inferred Mineral Resources: 204 000 ounces Au	(Claude Resources Inc. www.clauderesources.com; accessed February 12, 2004)	Patent
May–Spiers Ball Township (52M/01SE)	Au	Reserves: 30 000 tons of 0.09 opt Au	AF (Bayne 1981)	Staked Claim
McCombe (Root Lake) (52J/13NE)	Lithia	Reserves: 2.3 million tons of 1.3% lithia to the 500 foot level	MP90 (Breaks 1979)	Patent, Licence of Occupation

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status
McFinley Mine Bateman Township (52N/04SE)	Au	Inferred Mineral Resource: 334,007 *in situ* at an average grade of 0.20 opt Au to a depth of 400 feet Broke down as follows: FWC-3 Zone: 3 875 tons of 0.50 opt Au C Zone: 10 520 tons of 0.87 opt Au FWC-1 + 2: 30 600 tons of 0.24 opt Au C-2 Zone: 128 700 tons of 0.11 opt Au C-3 Zone: 36 562 tons of 0.19 opt Au WL Zone: 10 500 tons of 0.49 opt Au 403 Zone: 5 000 tons of 0.80 opt Au BX Zone: 2 000 tons of 0.84 opt Au D Zone: 106 250 tons of 0.15 opt Au Resource Estimate: 890 000 tons at an in-place grade of 0.19 opt Au to a depth of about 1700 ft	AF (Hogg 2002)	Patent, Licence of Occupation
Mount Jamie Todd Township (52M/01SE)	Au	Reserves: Main Zone: 47 048 tons of 0.425 opt Au No. 2 Shaft area: 25 360 tons of 0.37 opt Au	AF (Gordon 1988)	Patent
My-Ritt (Coin Lake) Heyson Township (52N/04SW)	Au	Unknown	OFR 5558 (Durocher, Burchell and Andrews 1987)	Patent
New Faulkenham Mines Ltd. (Faulkenham Lake) Baird Township (52K/13NW)	Au	Reserves: 15 000 tons of 0.428 opt Au ($15.00 at $35.00 per ounce Au)	AF (Holbrooke 1958)	Patent
North Spirit Lake (Crown Trust) (53C/07NW)	Fe	Reserves: 1.3 million tons per vertical foot of 33.94% Fe	MRC11 (Shklanka 1968) GR150 (Wood 1977)	Patent, Leased
Northgate Prospect Earngey Township (52N/02SE)	Au	Reserves: 64 600 tons of 0.28 opt Au	AF (Zinn 1984)	Staked Claim
Ogani Lake (52K/15NE)	Fe	Reserves: 100 000 000 tons of 21.6% Fe	MRC11 (Shklanka 1968)	Open
Papaonga Lake (52K/16NE)	Fe	Reserves: 13 500 000 tons of 31.06% Fe	MDIR	Open
Red Crest (Red Summit) Todd Township (52M/01SE)	Au	Reserves: 47 439 tons of 0.269 opt Au (uncut grade) (Horwood 1945) 38 000 of 0.3 opt Au	NM - March 14, 1985, p.21 ODM Annual Report (Horwood 1945)	Patent
Redaurum Baird Township (52N/04SW)	Au	Possible Reserves: 14A Zone: 243 750 tons of 0.22 opt Au 26 250 tons of 0.20 opt Au No. 2 Zone: 137 500 tons of 0.18 opt Au No. 3 Zone: 102 500 tons of 0.18 opt Au Camp Zone: 24 750 tons of 0.13 pt Au	AF (Barclay 1986)	Patent
Richardson (Kostynuk Bros. Mine) (52N/09SW)	Au	Reserves: 700 000 tons of 0.2 opt Au inferred reserves	OFR 5835 (Parker and Atkinson 1992)	Patent
Rowan Todd Township (52M/01SE)	Au	Reserves: 10 900 tons of 0.657 opt Au ($23.00 a ton at $35.00 per ounce)	AF (Bishop 1939)	Patent
Sanshaw (Whitehorse Island) Dome Township (52N/04SW)	Au	Reserves: 175 000 tons of 0.20 opt Au	NM - June 11, 1953	Patent, Licence of Occupation
Setting Net Lake (53C/13SE)	MoS_2	Reserves: 100 000 000 tons of 0.09% MoS_2	MDIR NM - March 23, 1973	Open

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status
Sol d'Or Honeywell Township (52N/07SE)	Au	Reserves: 8 565 tons of 0.57 opt Au	Energy Mines and Resources Canada 1989	Staked Claim
Springpole Lake Prospect (52N/08NW)	Au	Reserves: Portage Zone: 7.9 million tons of 0.07 opt Au 27 million tons of 0.035 opt Au including 4 million tons of 0.091 opt Au and 405 000 tons of 0.14 opt Au	OFR 5835 (Parker and Atkinson 1992)	Patent, Staked Claims
Starratt–Olsen Mine Baird Township (52K/13NW)	Au	Reserves: 15 000 tons of 0.45 opt Au	NM - July 26, 1973	Patent
Trout Bay Zinc Pit Zone Mulcahy Township (52M/01SE)	Zn, Cu, Pb, Ag, Au	Reserves: West Zone: 13 776 tons of 4.75% Zn, 0.68% Cu, 0.94 opt Ag East Zone: 124 760 tons 7.86% Zn, 1.5% Cu, 0.24% Pb, 1.7 opt Ag, 0.007 opt Au	MP147 (Atkinson et al. 1990a) Preliminary Map P.567 (Riley 1969) MDIR	Patent (Mining Rights Only), Leased (Mining Rights Only, Licence of Occupation
Uchi Mine Earngey Township (52N/02SE)	Au	Reserves: 214 000 tons of 0.147 opt Au	Energy Mines and Resources Canada 1989	Patent
Wilmar Mine Dome Township (52N/04SW)	Au	Reserves: Quoted from Durocher et al 1987 unless indicated otherwise. Diorite Dike Zone: 140 000 tons of 0.21 opt Au East Breccia Zone: 31 500 tons of 0.32 opt Au (Proven) 50 500 tons of 0.25 opt Au (Probable) 1 777 000 tons of 0.24 opt Au (Possible) Carbonate Zone: 25 000 tons of 0.17 opt Au (Probable) 7 500 tons of 0.15 opt Au (Possible) West Granodiorite Zone: 3.15 to 4.5 million tons of 0.076 to 0.131 opt Au (Energy Mines and Resources Canada 1989) Granodiorite Zone: 5 700 000 tons of 0.10 to 0.15 opt Au	OFR 5558 (Durocher, Burchell and Andrews 1987) Energy Mines and Resources Canada 1989	Patent
Woco Vein Earngey Township (52N/02SE)	Au	Reserves: 21 263 tons of 0.80 opt Au	AF (Germundson 1995)	Staked Claims
Young, H.G. Mines Ltd. Balmer Township (52N/04SW)	Au	Reserves: 270 000 tons of 0.31 opt Au	OFR 5558 (Durocher, Burchell and Andrews 1987)	Patent

Note: This table contains tonnage and grade estimates referred to as reserves (indicated, possible, probable), which were determined at various times by methods largely unreported. None of these estimates are known to conform to the standards required for National Instrument 43-101. All should be considered inferred mineral resources not reserves.

REFERENCES

Adams, G.D. 1976. Precious metal veins of the Berens River Mine, northwestern Ontario; unpublished MSc thesis, University of Western Ontario, London, Ontario, 114p.

Archibald, C.W. 1970. Summary report on Copper-Lode Mines Ltd. Red Lake–Uchi Lake area; Red Lake Resident Geologist's office, assessment file, Belanger Township, Copper-Lode Mines Ltd., File #2, 27p.

Atkinson, B.T., Parker, J.R. and Storey, C.C. 1990a. Red Lake Resident Geologist's District—1989; *in* Report of Activities 1989, Resident Geologists, Ontario Geological Survey, Miscellaneous Paper 147, p.41-68.

——— 1990b. Red Lake Resident Geologist's District—1990; *in* Report of Activities 1990, Resident Geologists, Ontario Geological Survey, Miscellaneous Paper 152, p.31-66.

Ayres, L.D. 1970. Setting Net Lake area; Ontario Department of Mines, Preliminary Map P.538(revised), scale 1:15 840.

——— 1974. Geology of the Trout Lakes area, District of Kenora (Patricia Portion); Ontario Division of Mines, Geological Report 113, 199p.

——— 1977. Importance of stratigraphy in early Precambrian volcanic terranes: cyclic volcanism at Setting Net Lake, northwestern Ontario; *in* Volcanic regimes in Canada, Geological Association of Canada, Special Paper 16, p.243-264.

Ayres, L.D., Raudsepp, M., Averill, S.A. and Edwards, G.R. 1973. Favourable Lake–Berens Lake; Ontario Division of Mines, Map 2262, scale 1:253 440.

Banghart, M.D. 1940. Development and construction at Berens River Mines Ltd.; The Pre-Cambrian, February 1940, reprint on file in Red Lake Resident Geologist's office, assessment file 53C/13NE, Berens River Mines.

Barclay, W.F. 1986. Proposed drilling on the Redaurum property, Baird Township, Red Lake, Ontario; Red Lake Resident Geologist's office, assessment file, Baird Township, Redaurum Red Lake Mines Ltd., No. OM85-1-C-219, 9p.

Bateman, J.D. 1939a. Geology of the North Spirit Lake area; Ontario Department of Mines, Annual Report 1938, v.47, pt.7, p.44-78.

——— 1939b. Recent developments in the Favourable Lake Area; Ontario Department of Mines, Annual Report 1938, v.47, p.7, p.72-92.

Bayne, A.S. 1981. Report to Dumont Nickel Corporation on gold property—Ball Township; Red Lake Resident Geologist's office, assessment file, Ball Township, Dumont Nickel Corporation, No. MEAP RL-86, 52p.

Bevan, A.A. 1983. Getty–Zahavy Joint Venture Favourable Lake Project, northwestern Ontario; Red Lake Resident Geologist's office, assessment file, 53C/13SE, Getty Canadian Minerals Ltd., No. OM-82-1-C-54 File# 8, 26p.

Bishop, E.G. 1939. Lake Rowan Gold Mines property; Red Lake Resident Geologist's office, assessment file, Todd Township, Lake Rowan Gold Mines Ltd., 6p.

Blackburn, C.E., Hinz, P., Storey, C.C., Kosloski, L. and Ravnaas, C.B. 1999. Report of Activities 1998, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts; Ontario Geological Survey, Open File Report 5987, 88p.

Breaks, F.W. 1979. Lithophile mineralization in northwestern Ontario, rare element granitoid pegmatites; *in* Summary of Field Work, 1979, Ontario Geological Survey, Miscellaneous Paper 90, p.5-7.

Breaks, F.W., Bond, W.D., Desnoyers, D.W., Stone, D. and Harris, N. 1976. Operation Kenora–Ear Falls, Bruce–Bluffy lakes sheet, District of Kenora; Ontario Division of Mines, Preliminary Map P.1199, scale 1:63 360.

Butler, R.L. 1955. The geology of Madsen Red Lake gold mine; unpublished MSc thesis, University of Manitoba, Winnipeg, Manitoba, 138p.

Caughey, R. and Harris, S. 2004. 2003–2004 Geological and geochemical report, Blondin–Wavell Lake Project, Ontario; Red Lake Resident Geologist's office, assessment file, 52N/09SW, Bullion Resources Ltd., No.2.27952.

Coll, R. 1982. Getty–Zahavy Joint Venture Favourable Lake Project 1982 summary report; Red Lake Resident Geologist's office, assessment file, 53C/13SE, Getty Canadian Metals Ltd. OM-82-1-C-54 File #1 to 11, 49p.

Dehn, M. 2004. Magnetometer survey report; Red Lake Resident Geologist's office, assessment files, 52N/04SW, No.2.27770 and No.2.27768.

Dubé, B., Balmer, W, Sanborn-Barrie, Skulski, T. and Parker, J.R. 2000. A preliminary report on amphibole-facies, disseminated-replacement-style mineralization at the Madsen gold mine, Ontario; Geological Survey of Canada, Current Research 2000-C17, 12p. [electronic only]

Dubé, B., Williamson, K. and Malo, M. 2003. Gold mineralization within the Red Lake mine trend: example from the Cochenour–W[illegible]ns mine area, Red Lake, Ontario, with new key information from the Red Lake Mine and potential analog[illegible]the Timmins camp; Geological Survey of Canada, Current Research, 2003-C21, 15p. [electronic only]

Durocher, M.E., Burchell, P. and Andrews, A.J. 1987. Gold occurrences, prospects, and deposits of the Red Lake area; Ontario Geological Survey, Open File Report 5558, Volume 1, 433p.

Energy, Mines and Resources Canada 1989. Canadian mineral deposits not being mined in 1989; Energy, Mines and Resources Canada, Mineral Bulletin MR 223.

Ferguson, S.A. 1968. Geology of northern part of Heyson Township; Ontario Department of Mines, Geological Report 56, 54p.

Ferguson, S.A, Groen, H.A. and Haynes, R. 1971. Gold deposits of Ontario Part 1: Districts of Algoma, Cochrane, Kenora, Rainy River and Thunder Bay; Ontario Department of Mines, Mineral Resources Circular 13, 315p.

George, P.T. 1987. Summary report Favourable Lake Project, South Trout Lake Property for the period November 1, 1986 to February 28, 1987; Red Lake Resident Geologist's office, assessment file, 53C/13SE, Zahavy Mines Ltd., No. OM 86-1-P-274, 36p.

Germundson, R.K. 1995. Diamond drill report, St. Jude Resources Ltd.; Red Lake Resident Geologist's office, assessment file, Earngey Township, St. Jude Resources Ltd., No. OM94-080, 107p.

Gillies, B. 1982. Thrall property, Red Lake District report on 1981 surface diamond drilling program for Camflo Mines Ltd.; Red Lake Resident Geologist's office, assessment file, Dome Township, Camflo Mines Ltd., No. 63.4032, 27p.

Gordon, J.B. 1988. Jamie Frontier Resources Inc. summary report on the exploration program in Todd Township, Red Lake Ontario, March 1987 to February 1988; Red Lake Resident Geologist's office, assessment file, 52M/01SE, Todd Township, Jamie Frontier Resources Inc., OM87-1-L-154, a25p.

Hogg, G.M. 2002. Technical report on the McFinley Mine property of Rubicon Minerals Corporation; Red Lake Resident Geologist's office, assessment file, Bateman Township, Rubicon Minerals Corporation, Non-Assessment, 25p.

Holbrooke, G.L. 1958. Report on Red Lake properties, New Faulkenham Mines Ltd.; Red Lake Resident Geologist's office, assessment file, Baird Township, New Faulkenham Mines Ltd., 4p.

Horwood, H.C. 1945. Geology and mineral deposits of the Red Lake area; Ontario Department of Mines, Annual Report, 1940, v.49, pt.2, 231p.

Hurst, M.E. 1930. Geology of the area between Favourable Lake and Sandy Lake, District of Kenora (Patricia Portion); Ontario Department of Mines, Annual Report 1929, v.38, pt.2, p.49-84.

Keys, M.R. 1948. Berens River Mine; *in* Structural geology of Canadian ore deposits, The Canadian Institute of Mining and Metallurgy, v.1, p.365-368.

King, D. and Petrie, L. 1998. Report on geophysical surveys (MAG, HLEM 1996), the Dixie property; Red Lake Resident Geologist's office, assessment file, 52K/14 NW, Noranda Mining and Exploration Inc., No. 2.18690, 16p.

Kita, J. 1988. OMEP Report of work done on the Buffalo property by Red Lake Buffalo Resources Ltd., September 1 to December 31, 1987, March 1 to May 31, 1988; Red Lake Resident Geologist's office, assessment file, Heyson Township, Red Lake Buffalo Resources Ltd., No. OM87-1-L-190, 64p.

Kuryliw, C.J. 1967. A geological report on Aiken–Russet Red Lake Mines Ltd.; Red Lake Resident Geologist's office, assessment file, Baird Township, Aiken–Russet Red Lake Mines Ltd., MEAP RL 27, 16p.

Lee, C. 2004. Technical review of recent exploration activities on the Dixie Lake Project, Red Lake, Ontario; SRK Consulting (Canada) Inc. for Alberta Star Development Corporation, 55p.

Lewis, P. 1994. Geological survey Big Falls property November 1994; Red Lake Resident Geologist's office, assessment file, 52K/NW/14, Cumberland Resources Ltd., 2.16247, 26p.

Lichtblau, A., Hinz, P., Ravnaas, C., Storey, C.C., Kosloski, L. and Raoul, A. 2004. Report of Activities 2003, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts; Ontario Geological Survey, Open File Report 6127, 104p.

Lichtblau, A., Ravnaas, C., Storey, C.C., Raoul, A., Kosloski, L. and Wilson, S. 2003. Report of Activities 2002, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts; Ontario Geological Survey, Open File Report 6110, 112p.

MacDougall, C. 1995. Report on geophysical surveys (MAG, HLEM) - 1994 Ben Lake project 1994; Red Lake Resident Geologist's office, assessment file, 52K/NW, Noranda Mining and Exploration Inc., No. 2.15981, 12p.

——— 1996. Report on diamond drilling and lithogeochemistry 1994–1995, Copperlode property; Red Lake Resident Geologist's office, assessment file, Belanger Township, Noranda Mining and Exploration Inc. (Copperlode Property), No. 2.17097, 24p.

McClean, P. 1976. The 1976 exploration program Abino Gold Mines Ltd.; Red Lake Resident Geologist's office, assessment file, Dome Township, Abino Gold Mines Ltd., No. MEAP RL-46, 19p.

McKay, D.B., Cullen, D. and Nelson, B. 2002. Report to evaluate and recommend an exploration program on Anaconda Uranium Corp. Borthwick Lake property; Red Lake Resident Geologist's office, assessment file, 53C/13SE, Anaconda Gold Corp. Borthwick Lake Property (non-assessment), 44p.

McPhee, D.S. 1989. The Lingman Lake Deposit, Red Lake Mining Division; Report for Twin Gold Mines Ltd., Red Lake Resident Geologist's office, assessment file, 53F/15 SW, Twin Gold Mines Ltd. No. OM88-1-I-217, 27p.

Oliver, T.A. 1949. Ore minerals of the Berens River Mine; Canadian Mining Journal, June 1949, p.83-86.

Parker, J.R. 2000. Gold mineralization and wall rock alteration in the Red Lake greenstone belt: a regional perspective; *in* Summary of Field Work and Other Activities 2000, Ontario Geological Survey, Open File Report 6032, p.22-1 to 22-27.

Parker, J.R. and Atkinson, B.T. 1992. Gold occurrences, prospects and past-producing mines of the Birch–Confederation Lakes area; Ontario Geological Survey, Open File Report 5835, 332p.

Pressacco, R. 2004. Technical report on the resource estimate of the gold mineralization found on the Western Discovery Zone of the Gold Eagle Mine Property, Red Lake Ontario; Red Lake Resident Geologist's office, assessment file, Dome Township, Exall Resources Ltd., Southern Star Resources Inc. Gold Eagle Property.

Riley, R.A. 1969. Mulcahy Township, District of Kenora, Patricia Portion; Ontario Department of Mines, Preliminary Map P.567, scale 1:9600.

Robertson, J.A. and Gould, K.L. 1983. Uranium and thorium deposits of northern Ontario; Ontario Geological Survey, Mineral Deposits Circular 25, 152p.

Sanborn-Barrie, M., Rogers, N., Skulski, T., Parker, J., McNicoll, V. and Devaney, J. 2004. Geology and tectonostratigraphic assemblages, east Uchi Subprovince, Red Lake and Birch–Uchi belts, Ontario; Ontario Geological Survey, Preliminary Map P.3460, scale 1:250 000. [also Geological Survey of Canada, Open File 4256]

Sanborn-Barrie, M., Skulski, T. and Parker, J. 2004. Geology, Red Lake greenstone belt, western Superior Province Ontario; Geological Survey of Canada, Open File 4594, scale 1:50 000.

Shklanka, R. 1968. Iron deposits of Ontario; Ontario Department of Mines, Mineral Resources Circular 11, p.217.

——— 1970. Geology of the Bruce Lake area; Ontario Department of Mines, Geological Report 82, 27p.

Stone, D. 1998a. Precambrian geology of the Berens River area, northwest Ontario; Ontario Geological Survey, Open File Report 5963, 116p.

——— 1998b. Precambrian geology, North Spirit Lake area; Ontario Geological Survey, Preliminary Map P.3382, scale 1:250 000.

——— 2005. Geology of the northern Superior area, Ontario; Ontario Geological Survey, Open File Report 6140, 94p.

Stone, D., Fogel, R. and Fitzsimon, S. 1993. Precambrian geology, Favourable Lake area; Ontario Geological Survey, Preliminary Map P.3226, scale 1:50 000.

Thompson, P.H. 2003. Toward a new metamorphic framework for gold exploration in the Red Lake greenstone belt; Ontario Geological Survey, Open File Report 6122, 52p.

Thurston, P.C., Osmani, I.A. and Stone, D. 1991. Northwestern Superior Province: review and terrane analysis; *in* Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 1, p.81-144.

Tilsley, J.E. 1981. Evaluation of the Fairlie prospect Project No. 1259 for Sherritt Gordon Mines Ltd; Red Lake Resident Geologist's office, assessment file, Fairlie Township, Sherritt Gordon Mines Ltd., No. 2.4561, 58p.

Werniuk, J. 2005. Red Lake just hitting its stride; Canadian Mining Journal, January 2005, p.16-22.

Wilson, J. 2004. Drilling Assessment Report, Portage Property; Red Lake Resident Geologist's office, assessment file, 52N/07SW, Fronteer Development Group, No.2.27924

Wilton, C.K. 1973. Magnetometer and electromagnetic survey and diamond drilling on the property of Cole Gold Mines Ltd. and adjoining Kerr Addison claims, Ball Twp., Ontario; Red Lake Resident Geologist's office, assessment file, Ball Township, Cole Gold Mines–Kerr Addison (option), No. MEAP RL-19, 63.3206, 6p.

Winter, L.D.S. 1988. Geological report on the Zahavy Mines Ltd. property Favourable Lake area, Ontario for Zahavy Mines Ltd.; Red Lake Resident Geologist's office, assessment file, 53C/13SE, Zahavy Mines Ltd., No. OM 86-1-P-274, 34p.

Wood, J. 1977. Geology of North Spirit Lake area, District of Kenora (Patricia Portion); Ontario Division of Mines, Geoscience Report 150, 60p.

Zinn, R.A. 1984. Report of exploration in 1983, Earngey Township, Project 430, Orofino Resources Ltd.; Red Lake Resident Geologist's office, assessment file, Earngey Township, Orofino Resources Ltd., No. 2.7823, 14p.

Ontario

Ontario Geological Survey
Regional Resident Geologist Program

Red Lake Regional Resident Geologist (Kenora District)—2004

by

P. Hinz, C. Ravnaas and A. Raoul

2005

CONTENTS

Kenora District—2004

INTRODUCTION 1
MINING ACTIVITY 1
Nelson Granite Ltd. 1
Cold Spring Granite Canada Ltd. 2
EXPLORATION ACTIVITY 6
Gold 6
Base Metals 14
Emeralds 14
Rare-metal Pegmatites 15
Granite Dimension Stone 15
KENORA DISTRICT STAFF AND ACTIVITIES 15
PROPERTY EXAMINATIONS 18
Armstrong Occurrence, Messrs Glatz and Riives 18
Graphic Lake Pegmatite Occurrence, J. Resky 20
Magnet Point Occurrence, Iskatewizaagegan No.39 First Nation 22
Sakoose Mine Property 23
Scarp Lake Property 26
Introduction 26
Historical Work 26
Regional Geology 26
Structural Geology 26
Economic Geology 27
Geochemistry 27
Recommendations 27
RECOMMENDATIONS FOR EXPLORATION 29
Gold Mineralization within Mafic Intrusions 29
OGS ACTIVITIES AND RESEARCH BY OTHERS 29
REFERENCES 37

Tables

1. Assessment files received in the Kenora District in 2004 3
2. Exploration activity in the Kenora District in 2004 7
3. Property and field examination conducted by the Kenora District Geologists in 2004 16
4. Assay results for samples collected from the Armstrong occurrence 19
5. Assay results for samples collected from the Graphic Lake pegmatite occurrence 20
6. Assay results for samples collected from the Magnet Point property 22
7. Selected drill core assay results from the Sakoose Mine 24
8. Major element geochemistry for the Scarp Lake property 28
9. Metal analyses from the Scarp Lake property 28
10. Mineral deposits in the Kenora District 2004 31

Figures

1. Extent of staking in the Kenora District as of December 31, 2004 10
2. Exploration and quarry activity in the Kenora District in 2004 11
3. Property and field examination conducted in the Kenora District in 2004 17
4. Location of the Armstrong occurrence related to general geology of the surrounding area 19
5. Generalized geology of the Graphic Lake pegmatite property 21
6. Location of the Magnet Point occurrence in relation to the Duport Mine property 23
7. Grade thickness contours and drill hole piercing points of the Sakose Mine main quartz vein 25
8. Geology of the Scarp Lake property 28
9. Location of Ontario Geological Survey and other research activities in the Kenora District in 2004 30

RED LAKE REGIONAL RESIDENT GEOLOGIST (KENORA DISTRICT)–2004

P. Hinz[1], C. Ravnaas[1] and A. Raoul[2]

[1]District Geologist, Kenora District, Resident Geologist Program, Ontario Geological Survey

[2]District Support Geologist, Kenora District, Resident Geologist Program, Ontario Geological Survey

INTRODUCTION

Dimension stone (from 6 quarries) and railway ballast continued to be produced in the Kenora District in 2004. No metallic mineral production was recorded in the District. Advanced exploration projects at Cameron Lake (Nuinsco Resources Ltd.), Separation Rapids (Avalon Ventures Ltd. and Emerald Fields Resource Corp.), Shoal Lake (formerly Sheridan Platinum Group), Thunder Lake (Corona Gold Corp.–Teck Cominco Ltd.), and Werner Lake (formerly Canmine Resources Ltd.) were inactive during 2004.

With a continued rise in commodity prices, exploration activity on Crown Land in the Kenora District continued at a level comparable to that recorded during 2003. A total of 61 exploration projects were conducted by mineral exploration companies and individual prospectors during the year. At year's end, several properties were being prepared for drilling. Work completed within the Kenora District and filed for assessment credits, or otherwise provided, is shown in Table 1.

MINING ACTIVITY

There was no production of either base or precious metals in the Kenora District in 2004. Production continued from 6 granite quarries in 2004. The quarries are keyed, with letters, to Figure 2.

Nelson Granite Ltd. (A Division of Granite Monuments Ltd.)

Nelson Granite Ltd. continued year-round production from 4 stone quarries in the Kenora District, during 2004. Production continued at the **Docker Township quarry** (A), 10 km southwest of the town of Vermilion Bay. Homogenous, medium-grained, pink granite is produced from a granite plug, which is part of the Dryberry batholith. Fracturing is negligible, allowing for removal of blocks of virtually any size. The majority of the stone produced is used in the monument industry and is sold as "Vermilion Pink". In 2004, approximately 5710 m^3 (201 533 cubic feet) were produced (N. Nelson, Nelson Granite Ltd., personal communication, 2005).

Nelson Granite Ltd. continued production at their **Red Deer Lake quarry** (B) in 2004. The quarry is located on the north shore of Red Deer Lake, approximately 40 km northeast of Kenora and 15 km northwest of the railway stop at Jones. A total of 978 m^3 (34 541 cubic feet) were produced for use as monument and building stone (N. Nelson, Nelson Granite Ltd., personal communication, 2005). The stone is marketed as "Red Deer Brown" or "Canadian Mahogany" and is sold primarily to clients in North American markets. The stone is reddish brown and is composed of pink potassium feldspar phenocrysts in a fine- to medium-grained matrix of potassium and plagioclase feldspars, quartz and biotite. The granite formation is part of the Lount Lake batholith and is very massive with few, widely spaced fractures. Sheeting or horizontal fracturing is spaced from 1 to 5 m and greater allowing for extraction of large blocks (Hinz, Landry and Gerow 1994).

Nelson Granite Ltd. continued to produce stone from their **Forgotten Lake quarry** (C) in 2004. The quarry is located on the east side of Forgotten Lake, approximately 35 km north of Kenora and 10 km north of the hamlet of Redditt. The quarry can produce 2 colours: a green megacrystic granite marketed as "Pine Green" and a yellow megacrystic granite sold as "Crystal Gold". A combined total of 2502 m^3 (88 303 cubic feet) were produced and sold to North American markets (N. Nelson, Nelson Granite Ltd., personal communication, 2005). The stone is a medium- to coarse-grained, porphyritic granite composed of yellow potassic feldspar phenocrysts in a matrix of plagioclase, potassic feldspar, quartz and biotite. The granite, which is part of the Lount Lake batholith, is yellow at the surface (i.e., 60 cm to 6 m) and green at depth. The granite contains very few fractures; joints are spaced 2 to 3 m apart and sheeting is 1 to 2 m at the surface (Hinz, Landry and Gerow 1994).

Nelson Granite Ltd. started production at their **Second Mountain quarry** (D) in 2003. The quarry is located approximately 3 km east of their Forgotten Lake quarry. The quarry produced 483 m^3 (17 062 cubic feet) of yellow granite (N. Nelson, Nelson Granite Ltd., personal communication, 2005). The stone is very similar in appearance to Crystal Gold, which is produced at the Forgotten Lake quarry.

Cold Spring Granite Canada Ltd.

Cold Spring Granite Canada Ltd. (E) continued seasonal production from their **Kenora Sage quarry**, during 2004. The quarry is located approximately 38 km north-northeast of Kenora. The quarry produced 2 colours: a green megacrystic granite marketed as "Green Sage", and a yellow megacrystic granite sold as "Crystal Gold". The quarry produced 480 m^3 (16 934 cubic feet) of Green Sage and Crystal Gold and approximately 161 m^3 (5682 cubic feet) of Royal Auburn. The granite, which is part of the Lount Lake batholith, is yellow at the surface (i.e., 60 cm to 6 m depth), while below this, the colour changes to green. Jointing and sheeting are widely spaced and allow for the removal of extremely large blocks. The majority of blocks were shipped to the company's fabrication plant in Lac du Bonnet, Manitoba, while the remainder went to the parent company's plant in Cold Spring, Minnesota (B. Oden, Cold Spring Granite Canada Ltd., personal communication, 2005).

Cold Spring Granite Canada Ltd. continued seasonal production at their **Havik Lake quarry** (F) in 2004. The quarry is located approximately 34 km north-northeast of Kenora on the Jones Road. The quarry produced 161 m^3 (5682 cubic feet) of reddish brown, porphyritic granite, which is sold under the name of "Royal Auburn" (B. Oden, Cold Spring Granite Canada Ltd., personal communication, 2005). The quarry is hosted in a massive granite body, which is part of the Lount Lake batholith.

Table 1. Assessment files received in the Kenora District in 2004.

Abbreviations

AEM	Airborne electromagnetic survey	IP	Induced polarization survey
AM	Airborne magnetic survey	Lc	Linecutting
ARA	Airborne radiometric survey	Met	Metallurgical testing
BS	Beneficial Study	OD	Overburden drilling
Comp	Compilation	ODH	Overburden drill hole(s)
DD	Diamond drilling	PEM	Pulse electromagnetic survey
DDH	Diamond drill hole(s)	Pet	Petrology
DGP	Down-hole geophysics	Pr	Prospecting
GC	Geochemical survey	RES	Resistivity survey
GEM	Ground electromagnetic survey	Samp	Sampling (other than bulk)
GL	Geological Survey	Seismic	Seismic survey
GM	Ground magnetic survey	SP	Self-potential survey
GRA	Ground radiometric survey	Str	Stripping
Gr	Geological report	Tr	Trenching
HLEM	Horizontal loop electromagnetic survey	UG	Underground exploration/development
HM	Heavy mineral sampling	VLEM	Vertical loop electromagnetic survey
IM	Industrial mineral testing and marketing	VLFEM	Very low frequency electromagnetic survey

Township or Area	Company Name	Year	Type of Work (Work Value)	AFRO Number	Resident Geologist Office File Designation	
Abamategwia Lake Area	Zappitelli, A.	2002–03	Pr, Samp, Str ($ 1,468)	2.26862	52G12NW	A-1
Bad Vermilion Lake Area	Hexagon Gold (Ontario) Ltd.	2003	1 DD ($ 52,020)	2.26966	52C10NE	HHH-3
Bad Vermilion Lake Area	Hexagon Gold (Ontario) Ltd.	2004	1 DD ($ 51,163)	2.27953	52C10NE	HHH-4
Bad Vermilion Lake Area	Pitkanen, R.	2004	Lc, Samp ($ 250)	2.27508	52C10NE	M-8
Bell Lake Area	Unitronix Corporation	2003	AEM, AM, RES ($ 77,380)	2.27992	52G15SW	51
Bennett Lake Area	Angove, R.	2002–03	Pr, Samp ($ 1,330)	2.26277	52C16SW	EE-2
Bennett Lake Area	Angove, R.	2003	Pr, Samp ($ 1,360)	2.26750	52C16SW	EE-3
Bennett Lake Area	Hexagon Gold (Ontario) Ltd.	1996–97	16 DDH, Samp ($ 428,236)	2.22485	52C16SW	FF-1
Boyer Lake Area	Glatz, A., & Riives, J.	2004	Pr, Samp, GC ($ 5,140)	2.28778	52F07NE	LLL-1
Boyer Lake Area	Goldeye Exploration Ltd.	2004	IP, GM, Comp ($ 6,555)	2.28241	52F07NE	III-7
Boyer Lake Area	Goldeye Exploration Ltd.	2004	IP, RES, GM, Lc ($ 34,301)	2.28230	52F07NE	III-8
Boyer Lake Area	Johnson, S. & Prouty, K.	2004	Pr, Samp ($ 830)	2.28120	52F07NE	KKK-1
Boyer Lake Area	McAteer, W.	2003	Pr, Samp ($ 2,430)	2.27795	52F07NE	ZZ-4
Bradshaw Township	877578 Ontario Limited	2004	BS, Samp ($ 1,317)	2.28446	52G05NW	M-1
Bridges Township	Emerald Fields Resource Corporation	2003	Pr, Samp ($ 1,539)	2.26816	52F13SE	BB-2

Township or Area	Company Name	Year	Type of Work (Work Value)	AFRO Number	Resident Geologist Office File Designation	
Bridges Township	Emerald Fields Resource Corporation	2003	Gr, GL, Pr, Samp ($ 7,431)	2.26137	52F13SE	BB-3
Bridges Township	Emerald Fields Resource Corporation	2004	AEM, AM ($ 35,000)	2.28216	52F13SE	BB-4
Brownridge Township	Emerald Fields Resource Corporation	2002	1 DD, Samp ($ 8,881)	2.27259	52F15SE	GG-3
Brownridge Township	Emerald Fields Resource Corporation	2002–03	3 DDH, Pr, Samp, GL ($ 24,531)	2.26209	52F15SE	GG-2
Brownridge Township	Emerald Fields Resource Corporation	2003	GL, Samp ($ 2,418)	2.27258	52F15SE	GG-4
Brownridge Township	Houston Lake Mining Inc.	2003	Pr, Samp, GL ($ 20 931)	2.27634	52F15SE	FF-2
Code Township	Resky, J.	2004	Pr, Samp ($ 5,677)	2.27148	52E09SE	FF-1
Contact Bay Area	Atikwa Minerals Corporation	2003	Pr, Samp ($ 4,194)	2.27216	52F10NW	AAA-6
Contact Bay Area	Atikwa Minerals Corporation	2003	Pr, Samp, GL ($ 8,032)	2.27703	52F10NW	AAA-7
Contact Bay Area	Sovereign, W.	2003	Pr, Samp, Str, GL ($ 5,005)	2.26857	52F10NW	S-3
Dash Lake Area	Chute, M..	2004	GR, Samp ($ 9,493)	2.28663	52F04SE	S-4
Dogpaw Lake Area	Cunniah Resources Ltd.	2003–04	7 DDH, Samp ($ 194,822)	2.27511	52F05SW	MMMM-1
Dogpaw Lake Area	Cunniah Resources Ltd.	2004	Pr, Samp, GL ($ 91,890)	2.27990	52F05SW	MMMM-2
Dogpaw Lake Area	Cunniah Resources Ltd.	2004	GL, GC, Samp ($ 2,322)	2.28361	52F05SW	MMMM-3
Dogpaw Lake Area	Endurance Gold Corporation (Cunniah Resources)	2004	AM, ARA ($ 69,940)	2.28581	52F05SW	MMMM-4
Dogpaw Lake Area	Houston Lake Mining Inc.	2003	Lc, VLFEM, GM ($ 1,879)	2.28276	52F05SW	KKKK-4
Dogpaw Lake Area	Metalore Resources Ltd.	2002	21 DDH, Samp ($ 201,839)	2.27418	52F05SW	LLLL-3
Dogpaw Lake Area	Metalore Resources Ltd.	2003	GM, VLFEM ($ 15,662)	2.27171	52F05SW	LLLL-2
Dogpaw Lake Area	Metalore Resources Ltd.	2003	18 DDH, Samp ($ 19, 418)	2.27848	52F05SW	LLLL-4
Eagle Rock Lake Area	Champion Bear Resources Ltd.	2002–04	GL, Samp, GR ($ 5,064)	2.28284	52F02NE	D-7
Eagle Rock Lake Area	Champion Bear Resources Ltd.	2004	Pet, Comp ($ 15,526)	2.28630	52F02NE	D-5
Eagle Rock Lake Area	Champion Bear Resources Ltd.	2004	GL, Samp, GR ($ 11,565)	2.28795	52F02NE	D-6
Echo Township	1013012 Ontario Limited	2004	GL, Samp, Comp ($ 9,658)	2.27498	52F16NW	102
Echo Township	Atikwa Minerals Corporation	2003	Gl, Pr, Samp, Str, Tr ($ 24,708)	2.26635	52F16NW	101

Township or Area	Company Name	Year	Type of Work (Work Value)	AFRO Number	Resident Geologist Office File Designation	
Fourbay Lake Area	KBG Minerals Corporation	2003	2 DDH, Samp ($ 32,636)	2.26799	52J02SW	104
Fourbay Lake Area	KBG Minerals Corporation	2004	GM ($ 11,641)	2.27473	52J02SW	105
Garnet Bay Area	Emerald Fields Resource Corporation	2002	Tr, Samp ($ 1,341)	2.26495	52F11NW	Z-2
Garnet Bay Area	Emerald Fields Resource Corporation	2002	Pr, Samp, GR ($1,481)	2.27665	52F11NW	Z-4
Garnet Bay Area	Emerald Fields Resource Corporation	2004	AEM, AM ($ 34,440)	2.28195	52F11NW	Z-3
Glider Lake Area	877578 Ontario Limited	2004	GR, Pr, Samp ($ 751)	2.25838	52K07SW	A-2
Glider Lake Area	877578 Ontario Limited	2004	BS, Samp ($1,317)	2.28447	52K07SW	A-3
Glider Lake Area	877578 Ontario Limited	2004	BS, Samp ($ 1,431)	2.28448	52K07SW	A-4
Glider Lake Area	877578 Ontario Limited	2004	BS, Samp ($ 1,424)	2.28449	52K07SW	A-5
Glider Lake Area	877578 Ontario Limited	2004	BS, Samp ($ 1,311)	2.28450	52K07SW	A-6
Glider Lake Area	877578 Ontario Limited	2004	BS, Samp ($ 1,943)	2.28439	52K07SW	A-7
Glider Lake Area	877578 Ontario Limited	2004	BS, Samp ($ 1,301)	2.28437	52K07SW	A-8
Halkirk Township	Bond, J. & Eveleigh, A.	2004	Pr, Samp, GL ($ 7,820)	2.27872	52C11NE	AAA-2
Halkirk Township	Cousineau, L.	2003	Pr, Str ($12,744)	2.26655	52C10NW	U-19
Halkirk Township	Cousineau, L.	2003	Pr, Str ($ 4,057)	2.26654	52C10NW	U-20
Halkirk Township	Cousineau, L.	2003	Pr, Str ($ 5,660)	2.26815	52C10NW	U-21
Line Lake Area	Atikwa Minerals Corporation	2003	Pr, Samp, GL ($ 11,759)	2.26791	52F11SW	S-6
Line Lake Area	Crystal Quartz Canada Inc.	2004	BS, Samp 40,937)	2.27303	52F11SW	R-2
Lobstick Bay Area	Cabo Mining Enterprises Corp.	2004	Pr, Samp, GL ($ 12,315)	2.28206	52F05NW	BB-1
McFie Township	Glatz, A., & Riives, J.	2002–03	Pr, Samp ($ 887)	2.27600	52F16SW	HH-3
Patterson Lake Area	Angus & Ross Canada	2004	Gr, GC ($ 15,743)	2.28401	52L07SE	T-1
Penassi Lake Area	Unitronix Corporation	2004	AM, AEM, Pr, Samp ($ 30,735)	2.27993	52G14NE	63
Rex Lake Area	Atikwa Minerals Corporation	2003	Pr, GL, Str, Samp ($ 41,383)	2.27308	52L07NE	V-4
Rex Lake Area	Atikwa Minerals Corporation	2003	Pr, Tr, GL, Samp ($ 46,023)	2.27270	52L07NE	V-5

Township or Area	Company Name	Year	Type of Work (Work Value)	AFRO Number	Resident Geologist Office File Designation	
Reynar Lake Area	Atikwa Minerals Corporation	2003	1 DD, Samp ($ 13,881)	2.27239	52L06NE	X-4
Reynar Lake Area	Atikwa Minerals Corporation	2003	Pr, GL, Samp, Tr ($ 27,605)	2.27155	52L06NE	X-5
Shoal Lake Area	Smerchanski, D.	2004	Pr, Samp, GR ($ 2,402)	2.27443	52E10SW	DDD-1
Snook Lake Area	Queen, L.	2002–04	Pr, Str, Samp, Lc ($ 24,822)	2.27582	52L02NE	J-1
Squaw Lake Area	Emerald Fields Resource Corporation	2003	Gr, Pr, Samp ($ 2,339)	2.27694	52J02SE	133
Squaw Lake Area	Emerald Fields Resource Corporation	2004	AM, AEM ($ 82,400)	2.28203	52J02SE	134
Treelined Lake Area	Emerald Fields Resource Corporation	2002	Pr, GL, Samp ($ 4,301)	2.27269	52L08SW	N-2
Webb Township	Glatz, A.	2004	Pr, Samp ($ 454)	2.28348	52F15NE	35
Zarn Lake Area	1179785 Ontario Limited	2004	GL, Samp, Comp ($ 13,361)	2.28392	52J04SE	31

EXPLORATION ACTIVITY

A complete summary of exploration activity, including prospecting, is given in Table 2. Gold and emeralds were the predominant targets in 2004. Described below are programs with significant exploration expenditures and/or known results. Exploration information included in this section is taken from assessment files in the Kenora District office, unless otherwise indicated. Programs are keyed with numbers to Table 2 and Figure 2. The extent of staking is shown in Figure 1.

Gold

At Shoal Lake, **Amador Gold Corp.** continued exploring their KPM Shoal Lake project (6). In late 2003, Amador commissioned Giroux Consultants Ltd. to produce a resource estimate. Based on Giroux's calculations, the property contains an indicated resource of 1.096 million tonnes grading 6.63 g/t Au (234 000 ounces gold) and an inferred resource of 832 000 tonnes grading 5.63 g/t Au (151 000 ounces gold), based on a 3.0 g/t Au cut-off. In early 2004, Amador conducted a 10 000 m drill program, which tested the Cedar Island Mainland Zone and the 9 East Zone. Included in this drill program was a series of deep-tiered holes targeting the depth extension of the existing zones. The drill program produced "bonanza" grade assays up to 278.51 g/t Au and several significant intersections including 22.51 g/t Au over 8.02 m (true width) and 29.71 g/t Au over 1.78 m (true width) (*The SmartStox On-line Report*, August 25, 2004, www.smartstox.com).

During the third quarter of 2004, Amador announced the acquisition of additional ground to the north of the property, called the Glass Claims. The Glass Claims include the Crown Point Mine and the Tycoon Shaft. The Crown Point is an historical producer having yielded 3428 ounces of gold grading 22.85 g/t Au, while the Tycoon Shaft is reported to have returned 31.54 g/t Au over 3.35 m and 21.60 g/t Au over 6.1 m in drill core (Amador Gold Corp., press release, October 20, 2004). At the time of writing, Amador was conducting line-cutting in preparation for an induced polarization geophysical survey over the entire KPM Shoal Lake property (K. Leonard, Amador Gold Corp., personal communication, January 2005).

Table 2. Exploration activity in the Kenora District in 2004. Location shown on Figure 2.

Abbreviations

AEM	Airborne electromagnetic survey	IP	Induced polarization survey
AM	Airborne magnetic survey	Lc	Linecutting
ARA	Airborne radiometric survey	MRE	Mineral Resource Estimate
BS	Beneficiation Study	OD	Overburden drilling
Comp	Compilation	ODH	Overburden drill hole(s)
DD	Diamond drilling	PEM	Pulse electromagnetic survey
DDH	Diamond drill hole(s)	PGM	Platinum group metals
ELS	Enzyme Leach survey	Pr	Prospecting
GC	Geochemical survey	RES	Resistivity survey
GEM	Ground electromagnetic survey	Samp	Sampling (other than bulk)
GL	Geological Survey	Seismic	Seismic survey
GM	Ground magnetic survey	SP	Self-potential survey
GPR	Ground penetrating radar survey	Str	Stripping
Grav	Gravity survey	Tr	Trenching
HLEM	Horizontal loop electromagnetic survey	UG	Underground exploration/development
HM	Heavy mineral sampling	VLEM	Vertical loop electromagnetic survey
IM	Industrial mineral testing and marketing	VLFEM	Very low frequency electromagnetic survey

No	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
1	1013012 Ontario Limited (Goldlund Mine property)	Echo Township (Au)	GL, Samp, Comp
2	1179785 Ontario Limited (New Millennium property)	Zarn Lake Area (Au)	GL, Samp, Comp
3	2053236 Ontario Limited (Kings Bay property)	Fourbay Lake Area (Au)	Pr, Samp, Lc, GM
4	877578 Ontario Limited (Glider Lake properties)	Glider Lake Area (Stone)	BS, Samp
5	877578 Ontario Limited (Gummeson property)	Bradshaw Township (Stone)	BS, Samp
6	Amador Gold Corp. (KPM property)	Glass Township (Au, Cu)	35 DDH, Samp, Comp
7	Angus and Ross Canada / Gossan Resources Limited (Separation Rapids property)	Paterson Lake Area (Ta, Li, Cs, Rb, Au, Ag, Cu, Zn)	3 DDH, Samp, ELS
8	Atikwa Minerals Corporation (Echo Gold property)	Echo Township (Au)	GL, Samp
9	Barrow, S., & Plourde, A. (Conant Tp property)	Conant Township (Au)	Pr, Samp
10	Bjorkman, K. (Carb Breccia property)	Squaw Lake Area (Au)	Pr, Samp
11	Bjorkman, K. (Manitou West Limb property)	Harper Lake Area (Au)	Pr, Samp
12	Blackstone Ventures Ltd. (Kenbridge Mine)	Atikwa Lake Area (Ni, Cu)	Samp
13	Bond, J. and Eveleigh, A. (North Rock property)	Halkirk Township (Cu, Ni, PGM)	GL, Pr, Samp
14	Cabo Mining Enterprises Corp. (Electrum Lake property)	Ewart Township (Au)	2 DDH, Pr, Samp
15	Cabo Mining Enterprises Corp. (Hope Lake property)	Lobstick Bay Area (Au)	GL, Pr, Samp

No	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
16	Champion Bear Resources Ltd. (Eagle Rock property)	Eagle Rock Lake Area (Pt, Pd, Cu, Ni, Zu)	GL, Samp
17	Champion Bear Resources Ltd. (Plomp Farm property)	Aubrey Township (Au)	8 DD, IP, GL, Samp, Comp
18	Chute, M. (Dash Lake property)	Dash Lake Area (Au, Ag, Cu, Zn)	GL, Samp
19	Cousineau, L., Cousineau, R. and Desjardins, K. (George Smith property)	Halkirk Township (Au, Pb)	Pr, Str, Samp
20	Cousineau, L., Cousineau, R. and Desjardins, K. (Halkirk Soapstone property)	Halkirk Township (Stone)	Pr, Samp
21	Cousineau, L., Cousineau, R. and Desjardins, K. (Halkirk Ultramafic Pyroclastics)	Halkirk Township (Diamonds)	Pr, Samp
22	Crystal Quarries Ltd. (Crystal Quarry property)	Line Lake Area (Stone)	BS, Samp
23	Cunniah Lake Inc. (Dogpaw Lake property)	Dogpaw Lake Area (Au, Cu, Zn, Mo)	7 DDH, GL, GC, Pr, Samp
24	Emerald Fields Resource Corporation (Game Lake property)	Bridges Township (Cu, Zn, Ag, Au)	AM, AEM
25	Emerald Fields Resource Corporation (Scarp Lake Property)	Garnet Bay Area (Au, Ag, Cu)	AM, AEM
26	Emerald Fields Resource Corporation (Sturgeon Lake property)	Squaw Lake Area (Au)	AM, AEM
27	Endurance Gold Corporation (Dogpaw Lake property)	Dogpaw Lake Area (Au, Cu, Zn, Mo)	AM, ARA
28	Glatz, A. (Sakoose Mine)	Tabor Lake Area (Au)	Pr, Samp
29	Glatz, A. (Webb Tp. property)	Webb Township (Li, Cs, Rb, Ta, Au)	Pr, Samp
30	Glatz, A. and Riives, J. (Alto Gardner property)	MacFie Township (Au)	Pr, Samp
31	Glatz, A. and Riives, J. (Neepawa Island property)	Parnes Lake Area (Au)	GL, Pr, Samp (OEC)
32	Glatz, A. and Riives, J. (Thundercloud Lake property)	Boyer Lake Area (Au)	Pr, Samp (OEC)
33	Glatz, A. Riives, J. and Woitowicz, M. (Carleton Lake property)	Lower Manitou Lake Area (Au)	Pr, Samp
34	Goldeye Explorations Ltd. (Gold Rock property)	Boyer Lake Area (Au)	IP, RES, GM, Lc, Comp
35	Goldeye Explorations Ltd. (Thundercloud Lake property)	Boyer Lake Area (Au)	Pr, Samp
36	Halo Resources Ltd. (Duport Mine)	Snowshoe Bay Area (Au)	Samp, Comp
37	Hexagon Gold (Ontario) Limited (Foley Mine property)	Bad Vermilion Lake Area (Au)	1 DD
38	Houston Lake Mining Inc. (West Cedartree Gold property)	Dogpaw Lake Area (Au)	27 DDH, Samp

No	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
39	Johnson, S. and Prouty, K. (Katrina property)	Boyer Lake Area (Au)	Pr, Samp
40	KBG Minerals Corp. (King's Bay Gold property)	Fourbay Lake Area (Au)	GM
41	Metalore Resources Limited (Cedartree Gold property)	Dogpaw Lake Area (Au)	14 DDH, Samp
42	Mousseau, A. (Rita property)	Squaw Lake Area (Au)	Pr, Samp
43	Nelson Granite Ltd. (Second Mountain Quarry)	Forgotten Lake Area (Stone)	GPR, IM
44	Nuinsco Resources Limited (Cameron Lake Deposit)	Cameron Lake Area (Au)	MRE
45	Nuinsco Resources Limited (Rainy River Deposit)	Richardson Township (Au, Cu, Pt, Pd)	MRE
46	Pitkanen, R. (Furlong Lake property)	Kaiarskons Lake Area (Au)	Pr, Samp
47	Pitkanen, R. (Stellar property)	Bad Vermilion Lake Area (Au)	Pr, Samp, Lc
48	Resky, J. (Graphic Lake Pegmatite property)	Code Township (Li, Cs, Ta, Rb)	Pr, Samp
49	Rio Fortuna Exploration Corp. (Drayton Gold property)	Drayton Township (Au, Cu)	GM, Pr, Samp
50	RJK Exploration Ltd. (Savant Lake property)	Boucher Township (Cu, Zn, Au, Ag)	4 DDH, Samp
51	Savant Lake Minerals (McEdwards property)	Squaw Lake Area (Au)	Pr, Samp, Lc
52	Seafield Resources Ltd. (Elora Gold Mines property)	Boyer Lake Area (Au)	8 DDH, Samp
53	Smerchanski, D. (Claim 1178694 property)	Shoal Lake Area (Au)	Pr, Samp
54	Stares, S. and Stares, M. (Brooks Lake property)	Dash Lake Area (Au)	Pr, Samp
55	Stares, S. and Stares, M. (Off Lake property)	Menary Township (Au)	Pr, Samp
56	Temex Resources Corp. (Manitou Lakes project)	Boyer Lake Area (Au)	GL, Pr, Samp
57	True North Gems Inc. (Ghost Lake property)	Brownridge Township (Emeralds)	GL, Samp
58	Unitronix Corporation (Sturgeon West property)	Penassi Lake Area (Au, Cu, Zn)	GL, Pr, Samp
59	Western Warrior Resources Inc. (Eagle Lake property)	Buchan Bay Area (Au, Cu, Zn)	AM, AEM, Pr, Samp
60	Western Warrior Resources Inc. (Warclub Lake property)	Fisher Lake Area (Au, Cu, Zn)	AM, AEM, Pr, Samp
61	Withers, C. (Naumann property)	Southworth Township (Au, Ag, Cu, Zn)	Pr, Samp

Cabo Mining Enterprises Corp. drilled 2 holes on the Arsenic Zone, part of their Electrum Lake property (14). The 2 holes were intended to confirm mineralization reported in 1961 by Electrum Lake Mines Ltd. The latter's 1961 drilling intersected 9.25 g/t Au over 18 m (0.27 ounce gold per ton over 60 feet). Cabo's hole CEL-1 intersected 16.8 m grading 1.02 g/t Au, including a 0.7 m section grading 6.26 g/t Au; the second hole failed to intersect the desired target. In the third quarter of 2004, Cabo conducted a property-wide prospecting and sampling program; assays are still pending at year-end. A tentative drill program is planned for early 2005 (Cabo Mining Enterprises Corp., press release, December 9, 2004).

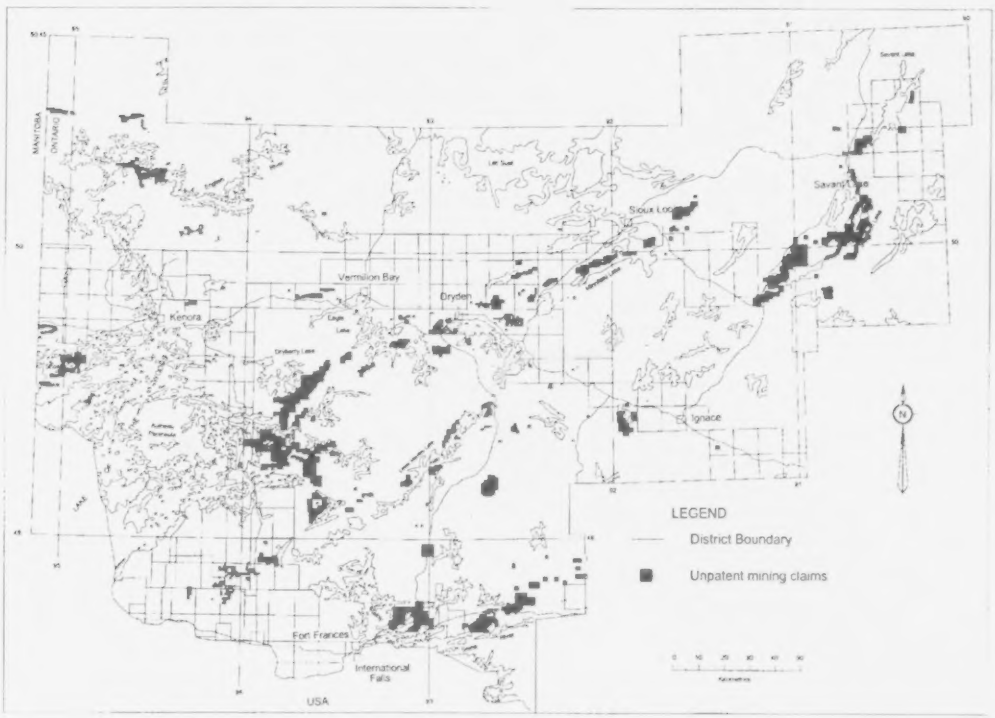


Figure 1. Extent of staking in the Kenora District as of December 31, 2004.

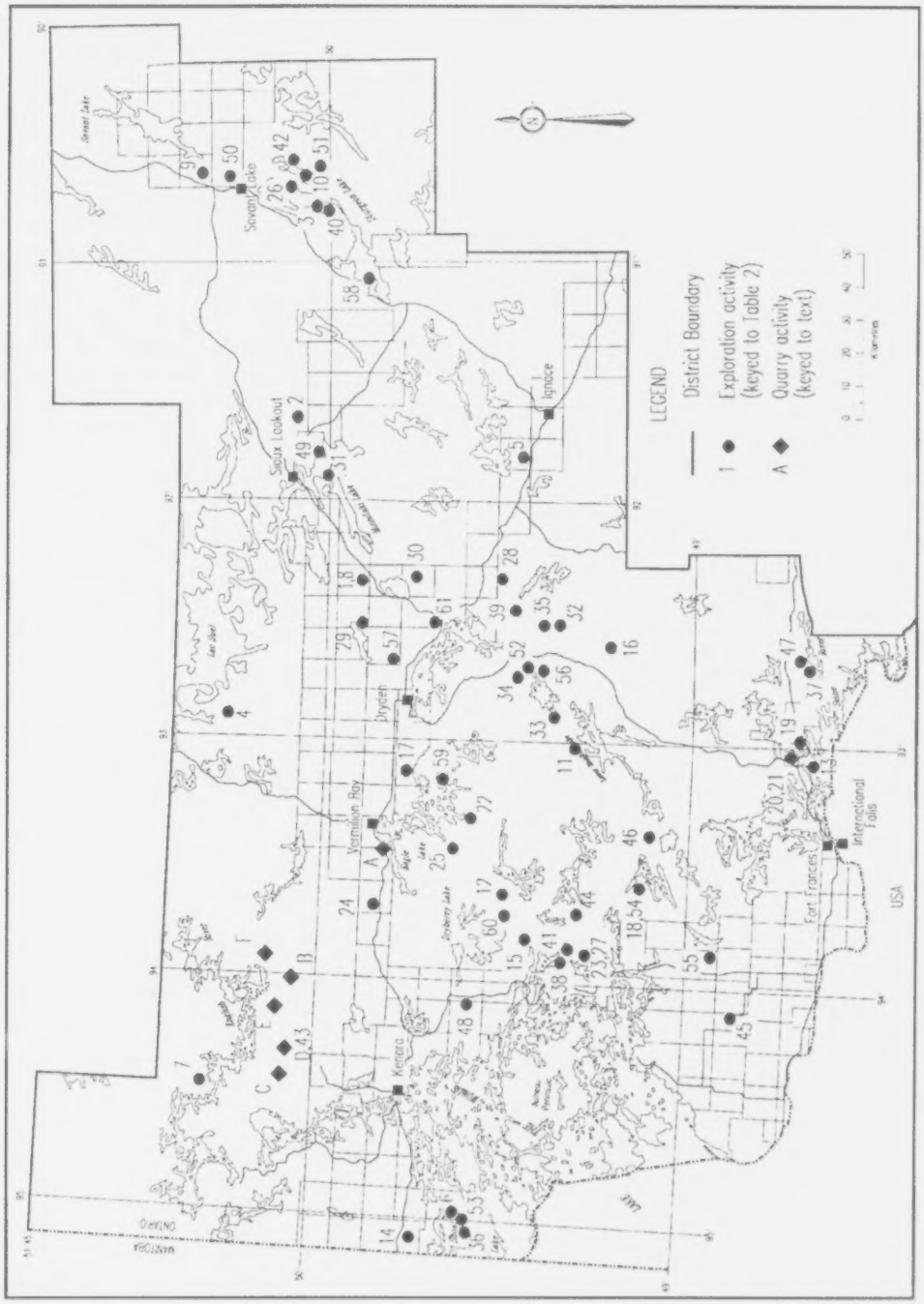


Figure 2. Exploration and quarry activity in the Kenora District in 2004. Locations listed in Table 2.

Champion Bear Resources Ltd. continued exploration on its Plomp Farm Gold Prospect (17) west of Dryden, Ontario. Following up on favourable results from a re-interpretation and re-sampling of previously drilled core, the Company conducted a comprehensive exploration program, including an induced polarization geophysical survey, an eight-hole 2800 m drill program, and a reconnaissance mapping and sampling program. Best results from the drill program included 1.27 g/t Au over 4.2 m (true width) including a higher grade section of 6.01 g/t Au over 0.7 m (true width). Results from chip samples over mineralized zones included 132.0 g/t Au over 0.12 m, while a grab sample from a narrow mafic dike assayed 4.9 g/t Au. In addition to the exploration work conducted on the property, the Company expanded their land holding by acquiring rights to an 80-acre package of patented land, located to the north of the property, and an additional block of 18 unpatented claim units, from Teck Cominco Limited, located west of the property formerly known as the Aubrey Gold Property. A reconnaissance exploration program of the latter property allowed Champion Bear to extend its known mineralized horizon by an additional 1.6 km to a total of 2.4 m. The Company continued to work the property at the time of writing (J. Hinzer, Champion Bear Resources Ltd., personal communication, January 2005).

Emerald Fields Resource Corp. continued to work 3 properties in the Kenora District during 2004. The Company flew TDEM and total magnetic airborne geophysical surveys over 2 gold properties: the Sturgeon Lake property in the Sturgeon Lake area (24); and the Scarp Lake property southwest of Eagle Lake (25) (A. Mowat, Emerald Fields Resource Corp., personal communication, January 2005).

Endurance Gold Corp. continued work on their Dogpaw Lake property. Endurance Gold acquired the property in late 2002 as Cunniah Lake Inc. through staking of 84 claims totalling 1033 claim units, currently, the property comprises 54 claims totalling 630 claim units. In early 2004, the company conducted a diamond drill program on the Starlyght and Weisner occurrences (23). The program consisted of 7 holes totalling 850.4 m and targeted silicified and sericitized granodiorite cut by mafic dikes. The drilling intersected sporadic gold values up to 1.793 g/t Au over 7.0 m. The program did not intersect similar values as previously obtained in grab and channel samples over the Starlyght Occurrence up to 47.29 g/t Au (grab) and 4.22 g/t Au over 10 m (channel). In the third quarter of 2004, the company conducted an airborne magnetic, electromagnetic and radiometric survey over portions of the property (27). Data collected from this survey is currently being evaluated (D. McIvor, Endurance Gold Corp., personal communication, January 2005).

Glatz, A. & Riives, I.J. acquired by staking their Minnitaki Lake property (31) located in the northern part of Minnitaki Lake, approximately 12 km due south of the Sioux Lookout, Ontario. The property consists of 4 un-patented mining claims totalling 42 claim units, which were staked in 2003. In 2004, the partners conducted prospecting, manual stripping and sampling on the property. A total of 215 samples were submitted for analysis for gold. Out of the total number of samples, 88 returned gold values in excess of 1 g/t. Grab samples up to 4.32 ounces gold per ton were obtained in sulphide-bearing mafic metavolcanic rocks. Numerous chip samples were collected with values up to 1.69 ounces gold per ton over 1 m, encountered in similar rocks (A. Glatz, Prospector, personal communication, January 2005). This exploration program was supported by funds obtained from the Ontario Prospector Association's Ontario Exploration Corporation prospecting program.

In July 2004, **Halo Resources Ltd.** entered into an agreement with Sheridan Platinum Group Ltd., and Mr. Pat Sheridan, to acquire a 100% interest in the Duport Property on Shoal Lake, west of Kenora (36). After securing financing, the company announced plans to conduct a 20 000 m drill program on the Duport property with the intent of expanding the resource base and to provide for an updated resource estimate (Halo Resources Ltd., press release, October 14, 2004).

Houston Lake Mining Inc. continued an aggressive exploration program on their West Cedartree Gold Project located approximately 60 km southeast of Kenora (38). The property hosts 2 zones of gold mineralization: the Angel Hill Gold Zone (AHGZ); and the McLennan Gold Zone (MGZ). The bulk of the work on the property focussed on the AHGZ, and included 2 phases of diamond drilling, totalling 27 holes for a total of 1839 m, geological mapping, and channel sampling. The diamond drilling intersected numerous mineralized sections including the following: 4.73 m grading 8.042 g/t Au; 10.2 m grading 4.268 g/t Au; assays for the second phase of drilling are still pending (Houston Lake Mining Inc., press releases, January 12, 2004 and December 7, 2004). Channel sampling over the AHGZ returned values from 0.592 g/t Au to 115.5 g/t Au with a weighted average of 32.23 g/t Au from quartz lenses not identified in previous work. On the MGZ, pre-existing trenches were cleaned

out and additional trenching, stripping and channel sampling conducted. Chip samples collected across the MGZ included 5.85 g/t Au over 1.4 m; and 3.09 g/t over 2.5 m. (Houston Lake Mining Inc., press release, November 4, 2004).

Metalore Resources Ltd. continued work on their East Cedartree gold property in 2004 (41). The property is located approximately 60 km southeast of Kenora and comprises in excess of 150 staked claim units. Metalore's 2004 exploration program included a drill program, which totalled approximately 1500 m in 14 holes, detailed geological mapping, and a limited vertical loop EM survey, which followed up on results from 2003. The core is currently stored in Sioux Narrows and will be split for assay in early 2005 (G. Chilian, Metalore Resources Limited, personal communication, January 12, 2005).

Nuinsco Resources Ltd. conducted exploration work on 2 gold properties in the Kenora District, the Cameron Lake Deposit and the 17 Gold Zone, the latter is part of the Rainy River Property. In late 2003, Nuinsco drilled 13 holes totalling 1845 m on their Cameron Lake property (44) (Nuinsco Resources Ltd., press release, January 21, 2004). The drilling was intended to provide additional data to allow for an updated resource estimate. The revised National Instrument 43-101 compliant resource estimate was released in April 2004 and is shown below (Nuinsco Resources Ltd., press release, April 28, 2004).

Above 305 m	Tonnes	Au (g/t)	Au (ounces)
Measured	187 000	6.77	40 700
Indicated	380 000	6.44	78 700
Inferred	258 000	6.02	49 900

Below 305 m	Tonnes	Au (g/t)	Au (ounces)
Measured			
Indicated	5000	5.62	900
Inferred	754 000	4.94	119 800

On their Rainy River property, **Nuinsco Resources Ltd.** commissioned a National Instrument 43-101 compliant resource estimate on the 17 Gold Zone (45). Using a 0.70 g/t Au cut-off grade, the resulting resource estimate is below (Nuinsco Resources Ltd., press release, May 5, 2004).

Classification	Tonnes	Au (g/t)	Cu (%)	Cu (%)	Ag (g/t)
Indicated	1.74 M	1.56	0.03	0.21	4.0
Inferred	11.0 M	1.33	0.02	0.20	3.6

Seafield Resources Ltd. signed an option agreement with Elora Gold Mines in late 2003 to acquire an 80% interest in the Elora Mine property (52). The property is located approximately 55 km south of Dryden, Ontario, in the historic Gold Rock mining camp. The property consists of 12 patented mining claims (Seafield Resources Ltd., management, discussion and analysis report, November 29, 2004). Historic production from the 1930s to the late 1940s totalled 8143 ounces of gold from the Laurentian Mine and 1370 ounces of gold, 296 ounces of silver from the Jubilee Mine.

Seafield Resources Ltd. conducted an eight-hole, 1047 m drill program on the property between March and April 2004. The drill program was intended to determine the extent of the gold mineralization and to evaluate mineralized trends within the vein. The best intersections were associated with quartz veins occurring along a steeply dipping horizon of interflow sediments and minor felsite dikes. Mineralized sections included 12.19 m grading 7.54 g/t Au; 3.75 m grading 5.22 g/t Au; and 2.9 m grading 6.58 g/t Au. Assays up to 178.94 g/t Au were intersected over narrow widths. Three separate holes were noted to contain coarse visible gold in quartz veins (Seafield Resources Ltd., management, discussion and analysis report, November 29, 2004).

Temex Resources Corp. conducted exploration work on their Manitou Lakes property (56) south of Dryden, Ontario. The property consists of 3 claim groups: the Aronson Lake, Gold Standard, and the High Valley. All are underlain by rocks of the Manitou Lakes greenstone belt and lie in proximity to the Manitou Straits fault. The Manitou Straits fault is a continuation of the Pipestone–Cameron fault, which is host to the Cameron Lake gold deposit. As part of its exploration efforts, Temex conducted geological mapping, prospecting, rock and soil sampling. The exploration work was intended to provide data to assist in identifying targets for drilling (Temex Resources Corp., press release, August 12, 2004).

Western Warrior Resources Inc. acquired 2 properties in the Kenora District during the third quarter of 2004. The Eagle Lake property (49) is a Au-Cu-Zn property, which includes the Fornieri occurrence, while similarly the Warclub Lake property targets potential Au-Cu-Zn volcanic massive sulphide and Ni-Cu-platinum group element mineralization discussed below in "Base Metals". The Eagle Lake property covers approximately 2088 ha and is located approximately 25 km southwest of Dryden, Ontario. In October 2004, Western Warrior contracted Firefly Aviation Ltd. to conduct a high-resolution airborne magnetic geophysical survey over the property. The survey was completed and the data are currently being evaluated (Western Warrior Resources Inc., press releases, September 7, and October 6, 2004).

Base Metals

Emerald Fields Resource Corp. conducted work on their Game Lake property (24). The Company flew TDEM and total magnetic airborne geophysical surveys over the property. The data will be used to identify potential drill targets (A. Mowat, Emerald Fields Resource Corp., personal communication, January 2005).

RJK Explorations Ltd. acquired their Savant Lake VMS property in August of 2004 (50). The property is located approximately 3 km east of the hamlet of Savant Lake and is comprised of 97 claim units covering a total of approximately 1552 hectares. The property is underlain by rocks of the Sturgeon Lake greenstone belt and is north of the past-producing Sturgeon Lake base metal camp. The company acquired the property due to lithologic and geochemical similarities to the Sturgeon Lake area. The company completed a phase I drill program targeting potential base metal mineralization. Four holes, totalling 472.9 m, were drilled and tested 3 separate geophysical anomalies. All 4 holes intersected massive to semi-massive sulphides hosted in intensely altered felsic volcanic rocks. Mineralized intersections yielded low anomalous values for copper (246 ppm), zinc (171 ppm), and gold (266 ppb). (RJK Explorations Ltd., press release, January 12, 2005).

On their Warclub Lake property (60), **Western Warrior Resources Inc.** conducted a high-resolution airborne magnetic geophysical survey over the property in October 2004. The survey was flown by Firefly Aviation Ltd. and covered 4400 line-kilometres, covering both the Warclub Lake and Eagle Lake properties. Data from the survey are currently being evaluated (Western Warrior Resources Inc., press releases, September 7, and October 6, 2004).

Emeralds

True North Gems Inc. continued work on their Ghost Lake property (57), located approximately 8.5 km northeast of Dryden, Ontario. In 2003, True North Gems confirmed the presence of gem-quality emeralds on the Ghost Lake property. In 2004, the company removed 2 one-ton mini-bulk samples from the emerald-bearing pegmatite. The samples were sent to facilities for emerald extraction; results from this process have not been released. The purpose of the work is to provide an idea of the potential of the property to host a commercial emerald operation (True North Gems Inc., press release, June 24, 2004).

Rare-Metal Pegmatites

Joint-venture partners **Angus & Ross Plc. and Gossan Resources Ltd.** conducted an exploration program on their Separation Rapids property approximately 55 km north of Kenora, Ontario (7). The company completed an Enzyme Leach® survey over claims located east of Avalon Ventures Ltd.'s Big Whopper pegmatite. The survey identified several anomalies, which are considered potential drill targets by the joint-venture partners. In addition, a three-hole drill program, totalling 243.8 m (800 feet), was completed on claims located on the north shore of the English River. Sampling of pegmatite intersections failed to yield significant assays. The companies are evaluating results from their 2004 exploration program and follow-up work on the Enzyme Leach® results is anticipated (R. Burt, Angus & Ross Plc., personal communication, January 2005).

Granite Dimension Stone

In addition to on-going production, **Nelson Granite Ltd.** conducted an exploration program on 4 to 5 sites in the vicinity of their Second Mountain quarry (43). Work included ground penetrating radar to map out subsurface fracture patterns and a colour indices survey. A colour indices survey utilizes a portable drill set on an all-terrain vehicle. Drill cuttings and dust are collected, the sample is washed in water to ensure slimes (extremely fine dust) are removed. Samples are then examined in wet and dry states to evaluate the colour of the host rock (G. Zebruck, Nelson Granite Ltd., personal communication, January 2005).

KENORA DISTRICT STAFF AND ACTIVITIES

The Kenora office was staffed by P. Hinz, District Geologist; C. Ravnaas, District Geologist; A. Raoul, District Support Geologist; and C. Cyr, summer assistant (SEP).

Kenora staff attended the following conferences and symposia:

- the Prospectors and Developers of Canada Convention in Toronto in March, where a Northwestern Ontario regional display was staffed;
- a poster and oral presentation highlighting activities in the district were presented at the Northwestern Ontario Mines and Minerals Symposium held in Thunder Bay in April;
- the Institute on Lake Superior Geology in Duluth, Minnesota in May;
- the Manitoba Mining and Minerals Convention held in Winnipeg, Manitoba in November; and
- the Ontario Exploration Geoscience Seminar, sponsored by the Ontario Prospector's Association, in Toronto in December, where a poster highlighting activities in northwest Ontario and a provincial Recommendations for Exploration poster were staffed.

In addition to these events staff organized or participated in

- Lac Seul First Nation prospecting course
- Shoal Lake First Nation prospecting course;
- Kenora area prospecting course
- the Dryden High School Conservation Course; and
- Kenora Gold Deposit presentation at Winnipeg CIM Branch in March.

In 2004, a total of 33 property visits were conducted by Kenora District Office staff (Table 3 and Figure 3).

Table 3. Property and field examination conducted by the Kenora District Geologists in 2004. Locations are keyed to Figure 3.

Number	Client – Occurrence
1	Amador Gold Corp. – Cedar Island Extension occurrence
2	Angus and Ross Canada & Gossan Resources – Separation Lake property
3	Bjorkman, K. – Early Lake occurrence
4	Bjorkman, K. – Swede Boys occurrence
5	Blackstone Ventures Ltd. – Kenbridge Mine
6	Cabo Mining – Mushkawa Lake occurrence
7	Cabo Mining – Porphyry Lake occurrence
8	Champion Bear Resources Ltd. – Plomp Farm occurrence
9	Cousineau Brothers – Grassy Portage ultramafic pyroclastic
10	Emerald Field Resources Ltd. – Eagle Lake soapstone quarry
11	Emerald Field Resources Ltd. – Scarp Lake occurrence
12	Endurance Gold Corporation – Starlyght and Weisner occurrences
13	Glatz, A. – Sakoose Mine
14	Glatz, A. and Riives, J. – Alto Gardner occurrence
15	Glatz, A. and Riives, J. – Armstrong occurrence
16	Glatz, A. and Riives, J. – Minnitaki Lake property
17	Houston Lake Mining Inc. – Angel Hill gold occurrence
18	Houston Lake Mining Inc. – McLennan occurrence
19	Metalore Resources Ltd. – East Cedartree occurrence
20	Mousseau, A. – Rita property
21	Nelson Granite Ltd. – Forgotten Lake quarry
22	Nelson Granite Ltd. – Red Deer Lake quarry
23	Nelson Granite Ltd. – Second Mountain quarry
24	Nelson Granite Ltd. – Shepody quarry
25	Nelson Granite Ltd. – Vermilion Bay quarry
26	Opawica Exploration Ltd. – Straw Lake property
27	Resky, J. – Graphic Lake pegmatite property
28	Shoal Lake #39 – Magnet Point gold occurrence
29	Staff Examination – Grand Chibougamau occurrence
30	Staff Examination – Rainbow Island prospect
31	Staff Examination – Thrasher-Gauthier occurrence
32	True North Gems Inc. – Ghost Lake property
33	Withers, C. – Naumann property

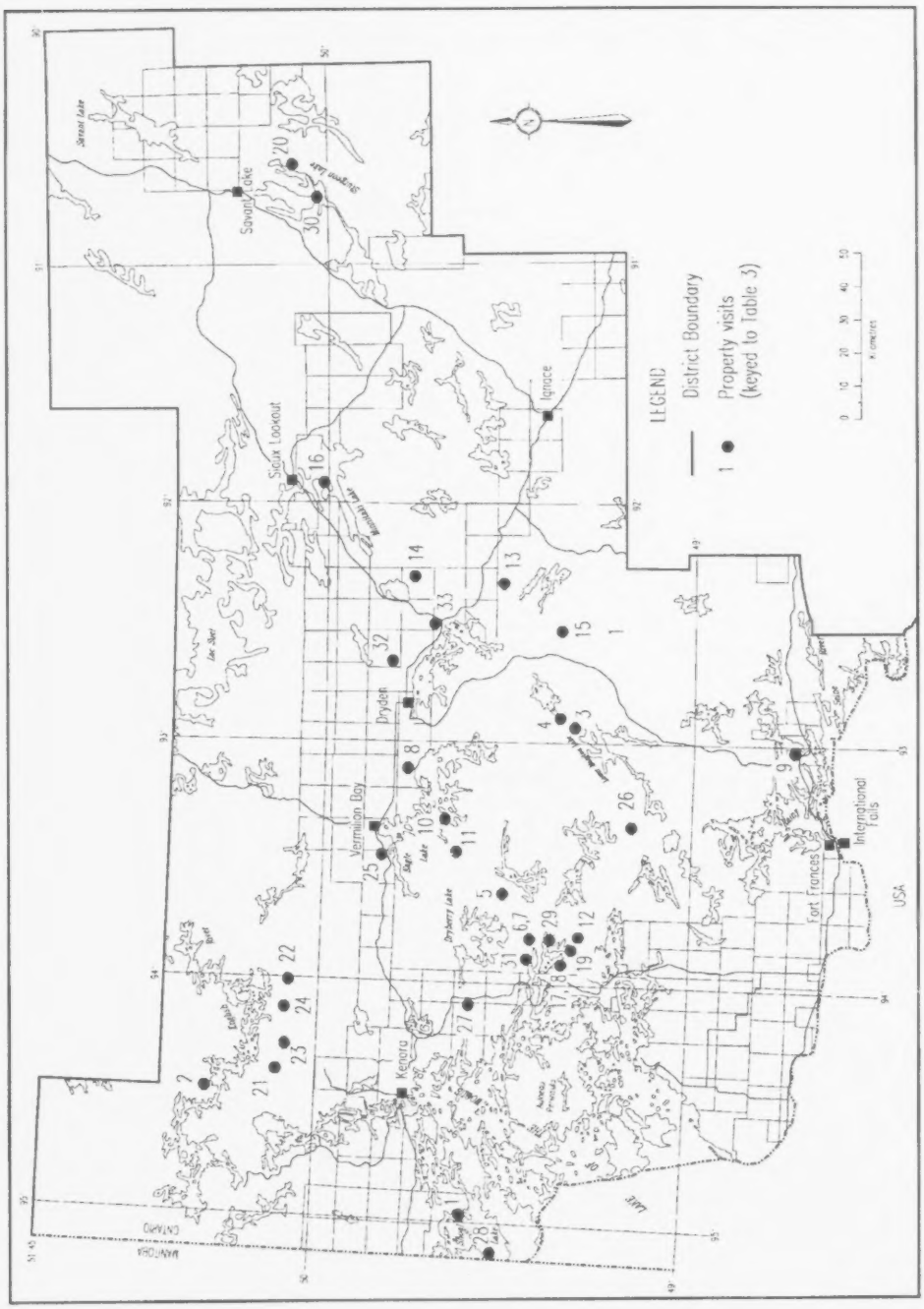


Figure 3. Property visits and field examinations conducted in the Kenora District in 2004.

PROPERTY EXAMINATIONS

Major authorship for the following property visits is indicated in parentheses following the title. All Universal Transverse Mercator (UTM) co-ordinates are in North American Datum 1983 (NAD83), Zone 15.

Armstrong Occurrence, Messrs Glatz and Riives (P. Hinz)

The Armstrong occurrence is located approximately 49 km southeast of the City of Dryden, Ontario. Access is gained by truck, travelling approximately 39 km east of Dryden on Highway 17 to the Snake Bay Road, then south to the Thunder Cloud Road. An all-terrain vehicle (ATV) is required to access the property via a brushed out trail, which departs from the Thunder Cloud Road. The final 300 m to the main showing and other showings was traversed on foot.

The first documentation of work in the vicinity of the Armstrong occurrence was in the late 1930s when the Pelham Prospect was discovered. In 1937, the occurrence was located and staked by a Mr. Fornieri as part of a larger property known as the Fornieri Option. Options to Bob Josey and Associates and M.T. O'Brien Limited resulted in trenching, sampling, geological mapping and diamond drilling all submitted as the Fornieri Option. Assays from chip samples outlined areas of significant gold mineralization including Zone 12A, which assayed up to 1.43 ounces gold per ton over 2.2 feet and traced along strike for 50 feet. Significant drill intersections included a section, which assayed 0.74 ounce gold per ton over 2.5 feet in hole number 6 (Kenora District Office, assessment files, 52F/07NE F-2).

The Armstrong occurrence is underlain by rocks of the Eagle–Wabigoon–Manitou lakes greenstone belt. Parker (1989, p.96) describes the geology of the Armstrong occurrence:

> "... is situated at the contact between metavolcanic rocks and the Thundercloud Porphyry. The occurrence has been described as a northeast-trending, fractured, silicified, pyritic zone within a "brecciated conglomerate" (Fornieri Option, Assessment Files, Resident Geologist's Office, Kenora). P. Neilson (geologist, Noranda Ltd., personal communication, 1986) described the host rock as a heterolithic breccia."

The author, assisted by A. Raoul, District Support Geologist, Kenora, collected 16 grab samples from various locations on the property and 2 locations located on Thundercloud Road. Six samples returned values for gold following gravimetric fire assay, results are shown on Table 4.

The current property owners conducted a systematic lithogeochemical and humus sampling program over the property and have kept GPS location data for each sample. Assay results from grab samples are reported to be as high as 0.42 ounce gold per ton from brecciated conglomerate.

At the main showing, a large stripped area was observed. The stripping is believed by the property owners to have been conducted by Noranda Explorations Ltd. in the 1920s. Several channel sample cuts were observed along the length of the stripped area. The host rock appears to be a heterolithic breccia or a volcaniclastic conglomerate. A quartz-eye porphyry dike, striking 004°, crosscuts the breccia and is weakly magnetic. Sections of the breccia are silicified, very massive and fractured in places. Sample PH-04-088 was collected from this location, and assayed 0.17 ounce gold per ton; this sample was from a gossanous portion of the outcrop and displayed possible silicification and chloritization.

A second location, approximately 100 m north, was visited and is believed by A. Glatz to be the original Armstrong occurrence, the dimensions of the stripped area is 20 by 20 m. At this location, a quartz-eye porphyry intrusion is in contact with the heterolithic breccia. The porphyry is highly siliceous and contains up to 2–3% sulphides. A very fine-grained mafic intrusive is observed and may represent a late mafic dike. Grab samples collected by A. Glatz are reported to have assayed up to 0.42 ounce gold per ton from this location. Five grab samples were collected, and sent for gravimetric fire assay; sample PH-04-092 was collected from a sulphide-rich zone, and returned 0.16 ounce gold per ton. The author was not able to determine whether the sample was of altered porphyry or heterolithic breccia.

Table 4. Assay results for samples collected from the Armstrong occurrence.

Sample Number	Location (NAD83)		Sample Description	Au (ounces per ton)
	Easting (m)	Northing (m)		
PH-04-088	5470609	534512	Altered heterolithic breccia, moderately silicified, weakly magnetic (poss. po), 3–5% sulphides (py, po, cpy)	0.17
PH-04-092	5470653	534541	Sulphide zone, possibly altered porphyry or heterolithic breccia	0.16
PH-04-094	5470174	534437	Sulphide-bearing gabbro, weakly magnetic, 1–2% sulphides (py)	0.02
PH-04-095	5470703	534517	Sulphide-bearing breccia, weakly carbonatized, 2–3% sulphides (py, po, cpy)	0.01
PH-04-097	5470653	534541	Sulphide-bearing altered porphyry, trace to 1% finely disseminated sulphides (py)	0.03
PH-04-098	5470653	534541	Altered porphyry/heterolithic breccia, 3–5% sulphides (py, cpy), fractures filled with calcite	0.02

Several other small exposures were examined and sampled. Gold values from 0.03 to 0.01 ounce gold per ton were returned from assays for 4 out of 8 samples.

Examination of data from A. Glatz indicates that anomalous gold mineralization is distributed throughout the property and is probably related to silicified and sulphide-rich zones related to the porphyry unit. Certainly, the highest gold assays obtained by the author are associated with altered equivalents of the heterolithic breccia and quartz-eye porphyry. Careful examination of all altered units in the vicinity of the occurrences is warranted. Mapping of alteration patterns, primarily silicification, is suggested to define anomalously mineralized zones. Since a portion of the porphyry is magnetic, an examination of available magnetic geophysical data is warranted to define the extents of the porphyry unit.

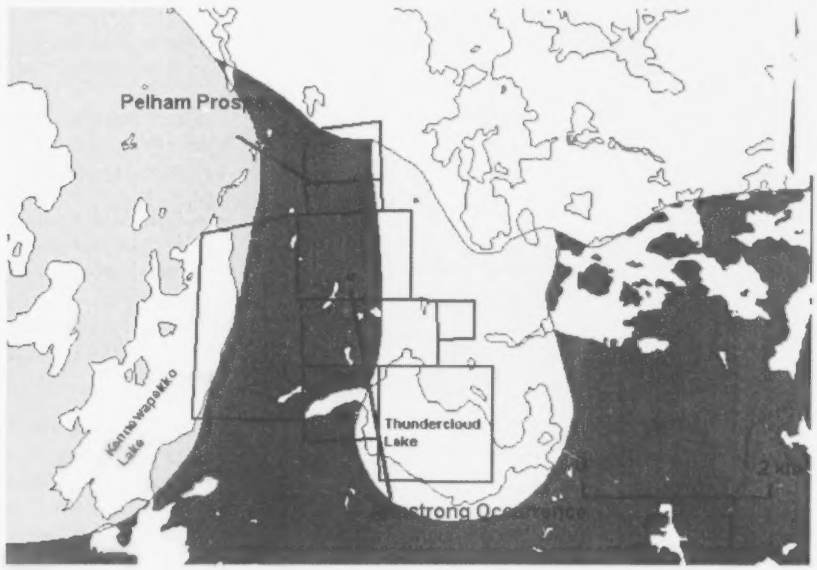


Figure 4. Location of the Armstrong occurrence related to general geology of the surrounding area (OGS 2003).

Table 4. Assay results for samples collected from the Armstrong occurrence

Sample Number	Location (NAD83)		Sample Description	Au (ounces per ton)
	Easting (m)	Northing (m)		
PH-04-088	547060[illegible]	5[illegible]512	Altered heterolithic breccia; moderately silicified; weakly magnetic (pyrr, pyr); 3–5% sulphides (py, po, cpy)	0.47
PH-04-092	547065[illegible]	5[illegible]511	Sulphide zone; possibly altered porphyry or heterolithic breccia	0.16
PH-04-094	5470[illegible]1	5[illegible]37	Sulphide-bearing gabbro; weakly magnetic; 1–2% sulphides (py)	0.05
PH-04-095	5470[illegible]0	5[illegible]17	Sulphide-bearing breccia; weakly carbonatized; 2–3% sulphides (py, po, cpy)	0.01
PH-04-097	547065	5[illegible]511	Sulphide-bearing altered porphyry; trace to 1% finely disseminated sulphides (py)	0.03
PH-04-098	547065[illegible]	5[illegible]511	Altered porphyry heterolithic breccia; 3–5% sulphides (py, cpy); fractures filled with calcite	0.05

Several other small exposures were examined and sampled. Gold values from 0.03 to 0.01 ounce gold per ton were returned from assays for 4 out of 8 samples.

Examination of data from A. Glatz indicates that anomalous gold mineralization is distributed throughout the property and is probably related to silicified and sulphide-rich zones related to the porphyry unit. Certainly, the highest gold assays obtained by the author are associated with altered equivalents of the heterolithic breccia and quartz-eye porphyry. Careful examination of all altered units in the vicinity of the occurrences is warranted. Mapping of alteration patterns, primarily silicification, is suggested to define anomalously mineralized zones. Since a portion of the porphyry is magnetic, an examination of available magnetic geophysical data is warranted to define the extents of the porphyry unit.

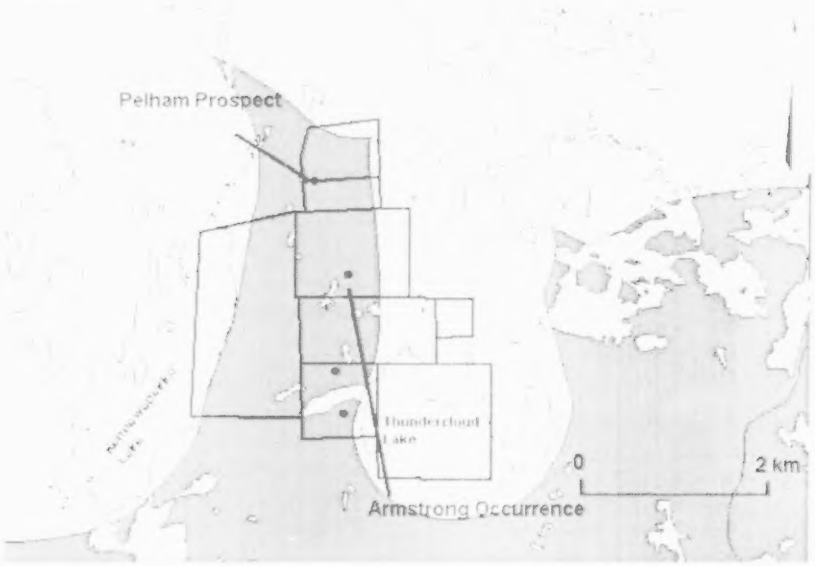


Figure 4. Location of the Armstrong occurrence related to general geology of the surrounding area (OGS 2003).

Graphic Lake Pegmatite Occurrence, J. Resky (P. Hinz)

The Graphic Lake pegmatite occurrence is located approximately 35 km southeast of the City of Kenora, Ontario. Access is gained by truck by travelling south on Highway 71 to the Bug Lake Road. A flagged and brushed trail departs the Bug Lake Road in a northerly direction from UTM co-ordinates 420676E, 5492742N (NAD83). The trail accesses several occurrences of pegmatite located along the south shore of Graphic Lake. Global Positioning System (GPS) co-ordinates, corrected to North American Datum 1983 (NAD83) are provided for all discussed locations.

Prior to Mr. Resky's prospecting program, no record of exploration work is documented on or adjacent to the property.

The Graphic Lake pegmatite occurrence is underlain by rocks of the Lake of the Woods greenstone belt, part of the western Wabigoon Subprovince. Trowell (1986, p.4-5) describes the regional geology surrounding the property:

> "Generally east-trending, isoclinally folded metavolcanics and metasediments, intruded by mafic to ultramafic and intermediate to felsic intrusions, occupy the central and southern parts of the map area. These rocks are bounded to the north, east and southeast by felsic to intermediate rocks possibly of batholithic proportions ..."
>
> "A diabase dike and minor glassy 'basaltic' diabase dikelets, probably of Proterozoic age, post-date all other bedrock units that are Archean in age."

The lithologies observed during the property visit included pegmatite dikes, metasediments, and a diabase dike. The metasedimentary rocks are part of the Royal Island Group and were deposited as turbidites, these rocks were later intruded by pegmatites dikes and finally all rock units were intruded by the diabase dike. Figure 5 displays the general geological relationships in the vicinity of the property.

The pegmatite dikes across the property display a consistent mineralogy of potassium feldspar, quartz and muscovite. Accessory minerals include garnet and tourmaline. Table 5 illustrates selected REE analyses for samples collected from various locations and lithologies across J. Resky's Graphic Lake property; results in bold text indicate anomalous values. The threshold for anomalous values for each element are based on statistical results provided by F. Breaks and J. Selway as a result of a province-wide pegmatite study (F.W. Breaks and J.B. Selway, OGS, personal communication, July 2003).

Table 5. Assay results for samples collected from the Graphic Lake pegmatite occurrence.

Sample Number	Sample Description	Location (NAD83)		Be (ppm)	Cs (ppm)	Li (ppm)	Rb (ppm)	Sn (ppm)	Ta (ppm)
		Easting	Northing						
PH-04-076	pegmatite, primarily qtz-kspar-musc	421203	5494048	**74.78**	**79.03**	22.62	**937.70**	15.31	**150.70**
PH-04-077	coarse pegmatite, kspar-qtz-musc, some bio, muscovite displays a plumose texture, tourmaline and garnet observed	421164	5494085	2.74	**15.94**	14.85	**599.60**	3.42	2.89
PH-04-078	fine-grained metasediment, arenite to greywacke, non-magnetic, relatively unaltered	421248	5493996	6.02	**187.00**	**218.92**	484.60	3.85	4.85
PH-04-080	coarse pegmatite, kspar-qtz-musc, some bio	421256	5493955	3.22	**22.33**	29.22	**935.50**	**22.92**	12.33
PH-04-081	pegmatite, kspar-qtz-musc-gnt, possible black oxides	421257	5493918	**15.77**	**20.68**	5.25	**544.40**	12.27	**42.98**
PH-04-082	pegmatite, kspar-qtz-musc-gnt, possible black oxides	421211	5493948	7.48	**30.82**	29.21	**881.20**	**133.96**	18
PH-04-085	coarse pegmatite, kspar, qtz, musc, minor garnet	420801	5493628	**36.08**	**18.06**	13.65	269.01	10.23	**59.95**

Enriched are **bolded**.

Seven samples of the ten collected returned anomalous values for a range of elements including beryllium, cesium, lithium, rubidium, tin and tantalum. Six of the samples that provided anomalous values were collected from pegmatites at various locations on the property. Samples –076 and –081 showed enrichment in beryllium, cesium, rubidium and tantalum. Sample –076 showed the greatest enrichment for beryllium, rubidium and tantalum out of all the samples. Sample –078 returned the highest values for cesium and lithium; this is of interest because the sample consisted of a metasedimentary rock. This enrichment may be a result of REE-enriched fluids passing through the country rock during emplacement of the pegmatite dikes.

Other observations noted during the property visit include, at Stop #2 (UTM location 421248E, 5493996N), a pegmatite dike that is in sharp contact with host metasedimentary rocks; the dike displays a drusy internal texture, which may indicate multiple injections of parental fluids. At Stop #7 (UTM location 421211E, 5493948N), tourmaline veinlets up to 3 cm wide are observed; in places, the tourmaline appears as 'wispy' strands along bedding planes in the host metasedimentary rocks, similar to a sulphidation texture observed in altered banded iron formation.

The presence of anomalous values for a number of REEs indicates that a certain level of fractionation has occurred in the pegmatites present on the property. The elevated values in sample –078 suggest that REE-enriched fluids were active during the intrusion of the pegmatite dikes and affected, to a certain extent, the surrounding country rock. Additional sampling of other pegmatites in the area is warranted; in addition, a reconnaissance sampling program of the country rock may lead to the identification of areas of enriched REEs and possible 'blind' pegmatite targets.

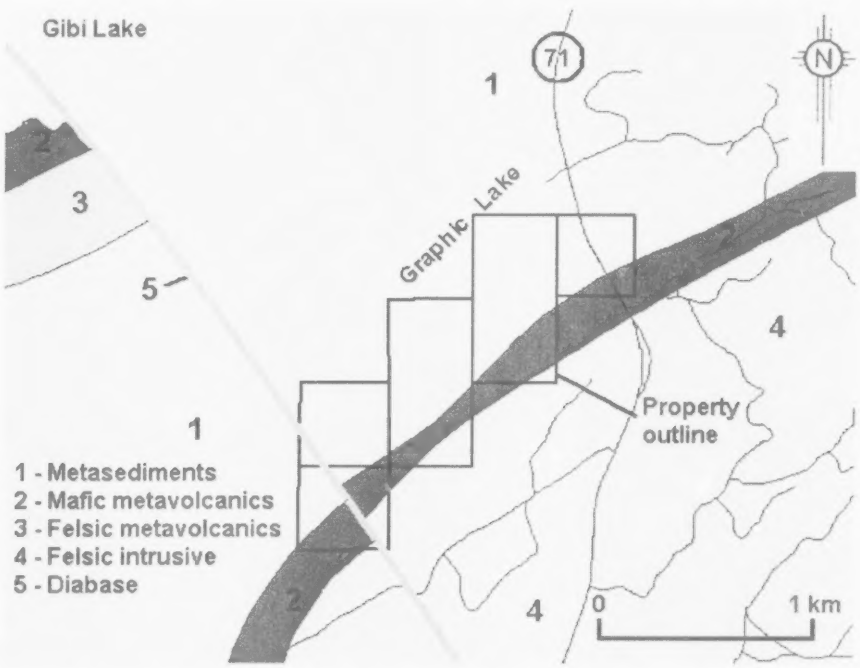


Figure 5. Generalized geology of the Graphic Lake pegmatite property (OGS 2003).

Seven samples of the ten collected returned anomalous values for a range of elements including beryllium, cesium, lithium, rubidium, tin and tantalum. Six of the samples that provided anomalous values were collected from pegmatites at various locations on the property. Samples '076 and '081 showed enrichment in beryllium, cesium, rubidium and tantalum. Sample '076 showed the greatest enrichment for beryllium, rubidium and tantalum out of all the samples. Sample '078 returned the highest values for cesium and lithium; this is of interest because the sample consisted of a metasedimentary rock. This enrichment may be a result of REE-enriched fluids passing through the country rock during emplacement of the pegmatite dikes.

Other observations noted during the property visit include, at Stop '21 (UTM location 421248E, 5493696N), a pegmatite dike that is in sharp contact with host metasedimentary rocks; the dike displays a drussy internal texture, which may indicate multiple injections of parental fluids. At Stop '71 (UTM location 421241E, 5493048N), tourmaline veinlets up to 3 cm wide are observed; in places, the tourmaline appears as "wispy" strands along bedding planes in the host metasedimentary rocks, similar to a sulphidation texture observed in altered banded iron formation.

The presence of anomalous values for a number of REEs indicates that a certain level of fractionation has occurred in the pegmatites present on the property. The elevated values in sample '078 suggest that REE-enriched fluids were active during the intrusion of the pegmatite dikes and affected, to a certain extent, the surrounding country rock. Additional sampling of other pegmatites in the area is warranted. In addition, a reconnaissance sampling program of the country rock may lead to the identification of areas of enriched REEs and possible "blind" pegmatite targets.

Figure 5. Generalized geology of the Graphic Lake pegmatite property (OGS 2011).

Magnet Point Occurrence, Iskatewizaagegan No.39 First Nation (P. Hinz)

The Magnet Point property is located approximately 40 km west of the City of Kenora, Ontario. The property is located on the southwest shore of Shoal Lake and is entirely within the reserve boundary of Iskatewizaagegan No.39 First Nation. Access is gained by boat from either the community of Keejick or the boat launch at Clytie Bay.

Exploration at Magnet Point was first recorded in the 1930s. Trenching was conducted prior to 1936 by persons unknown, then, in early 1936, Hollinger Gold Mines conducted surface exploration. Later, in 1936 through to 1938, Messrs. Byberg and Popham conducted surface trenching and diamond drilling of 4 holes totalling 458 feet. Reports related to this work indicate that gold was readily panned from the trenches. Drill sections illustrate gold intersections of 0.28 ounce gold per ton over 17.5 inches and 0.18 ounce gold per ton over 14 inches. In 1944, Sylvanite Gold Mines Ltd. optioned the property and conducted geological mapping (Davies and Smith 1988). The property was dormant until the mid-1980s when A. Mickelson conducted geological mapping, sampling and assaying followed by ground magnetic and electromagnetic surveys and an airborne electromagnetic survey over portions of the property (Kenora District Office, assessment files). No work was recorded since that time.

The Magnet Point occurrence is underlain by rocks of the Lake of the Woods greenstone belt. Davies and Smith (1988, p.205) described the property geology:

> "Rocks exposed at Magnet Point are fine- to medium-grained, northeast-trending, east-facing, mafic metavolcanic flows, and conformable gabbroic sills, which may be, at least in part, coarser mafic flows.... Magnet Point lies along a zone of significant movement, and all the rocks have a well-developed, northeast-trending (035-045°) foliation. Some outcrops display a series of branching shears, locally intersecting at high angles.
>
> Quartz porphyry outcrops are highly pyritiferous, and display considerable shearing. The contacts are sharp and appear intrusive; however, there is additional later shearing which masks the relationship. In contact with the porphyry is a dioritic rock, which resembles the Stevens Island diorite."

During the property visit a series of blasted and excavated trenches were examined. The author collected 15 samples, which were sent to the Ontario Geoscience Laboratories (GeoLabs) in Sudbury for gravimetric fire assay. Six samples returned values for either gold or silver, results are listed on Table 6. Sample PH-04-061 returned a value of 0.50 ounce gold per ton (17.2 g/t Au). The sample was of an altered ultramafic flow, which displayed weak carbonate alteration and no visible sulphides. When the pulps for sample PH-04-061 were re-assayed for gold none was detected. Sample PH-04-068 assayed 0.03 ounce gold per ton and 4.0 ounces silver per ton (1.0 g/t Au and 137.9 g/t Ag).

It is interesting to note that, based on airborne magnetic survey responses, it appears the property is located on a magnetic trend, which lines up roughly with the Duport Mine property (*see* Figure 6). It was recommended to Chief Fraser Greene and Roderick Mandamin, both of whom accompanied the author on the property visit, that the overgrown trenches be cleaned out and re-sampled. It would also be useful to utilize a mechanized hoe to clean out the largest trench, which is located in a topographic low and filled with muck and water.

Table 6. Assay results for samples collected from the Magnet Point property.

Sample Number	Description	Ag (ounces per ton)	Au (ounces per ton)
PH-04-061	altered ultramafic flow		0.50
PH-04-065	rusty mineralized porphyry		0.04
PH-04-066	sheared porphyry	0.30	
PH-04-068	quartz vein with sheared porphyry	4.00	0.03
PH-04-070	quartz vein with silicified host rock		0.04
PH-04-073	foliated/sheared mineralized porphyry		0.08

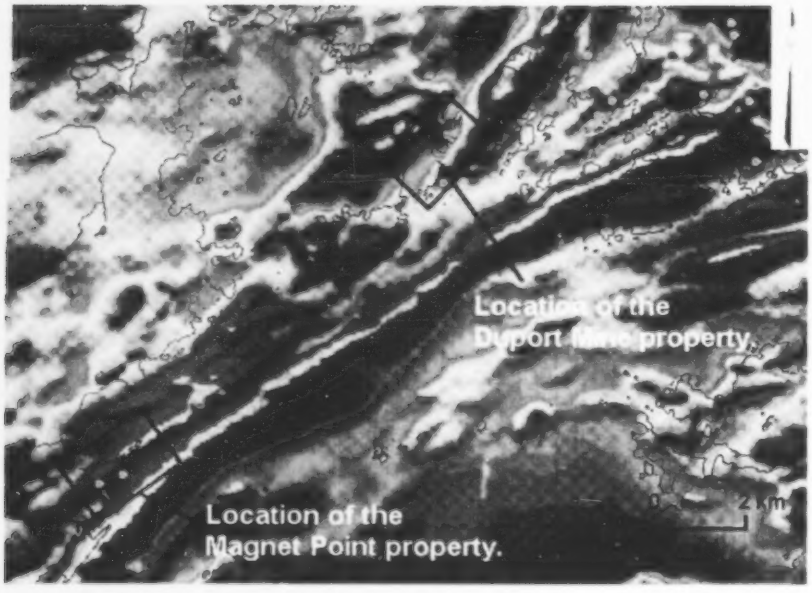


Figure 6. Location of the Magnet Point occurrence in relation to the Duport Mine property. Property locations overlain on total field magnetic geophysical map (GSC 1987, Kenora–Fort Frances aeromagnetic and VLF-EM survey).

Sakoose Mine Property (C. Ravnaas and A. Raoul)

The Sakoose Mine property, situated near Kawashegamuk Lake, is currently held by Dryden prospector Alex Glatz. The property is located approximately 46 km southeast of the city of Dryden. The property was available for option at the time of compilation.

Workings at the Sakoose Mine property consist of 5 shafts and an open cut. Production and the majority of past exploration activity has concentrated on the quartz vein system near 4 of the shafts and the open cut. Previous mining activity and exploration work is summarized by Hampton (1989) and Delisle (1990). Approximately 650 m west of the workings, Mr. Glatz located the 5th shaft. There is no record of production or exploration activity related to this part of the property.

The property is underlain by rocks of the Kawashegamuk Lake Assemblage of the Eagle–Wabigoon–Manitou lakes greenstone belt. The rock types present on the property include mafic volcanic, felsic volcanic and sedimentary rocks. All of these rocks have been cut by quartz ± feldspar porphyry intrusions (Delisle 1990). Regionally, the area has been deformed to produce a series of parallel, east-northeast-trending folds.

Diamond drilling and surface work has traced the main quartz vein system for a length of 400 m. Hampton (1989) states that "the vein structure roughly follows the axial plane of a minor anticlinal structure. The anticline plunges shallowly to the southwest, ... and gold-bearing zone of the main vein following the interface between the mafic volcanics and clastic sediments." Hampton (1989) also states "the porphyry appears to be later than the vein structure, in places splitting or dismembering the vein. The emplacement of the porphyry also appears to be post mineralization."

The last phase of exploration work involved a diamond drill program targeting the extension of the quartz vein system beneath the No. 4 shaft (Hampton 1989). Figure 7 illustrates the location of past workings, pierce-points of drill holes and a grade-thickness interpolation method of Kriging shown in a two-dimensional longitudinal profile of the main quartz vein system. The grade-thickness contours are based upon values (Table 7) obtained from diamond drill hole data (Hampton 1989).

The assay values presented in Table 7 are an average of the analytical results for consecutive drill core samples for each hole. The assays values are results of core length samples. The drill hole pierce-points of the main quartz vein illustrated in Figure 7 are representative of average analytical values that exceeded 1 g/t Au.

The accuracy of some analytical values should be interpreted with caution: Hampton (1989) states "the presence of coarse gold and the erratic distribution of this gold has produced highly variable assay results from relatively closely spaced drill intercepts." The reports on the diamond drilling programs do not indicate if metallic analytical techniques were used to check the "nugget" affect on assay results (Hampton 1989). Based upon the grade-thickness contours illustrated in Figure 7, it could be interpreted there is an southwest plunge to the main vein system. There could also be southwest extension of the mineralized zone.

Based upon his structural interpretation of drill hole and surface data, Hampton (1990) recommended exploring "other sites for the emplacement of quartz veining; either at other lithological contacts, or as separate vein development along axial panes of other anticlinal/synclinal structures", both on the present property in adjacent areas.

Table 7. Selected drill core assay results from the Sakoose Mine.

Number	Hole	Location	Depth* (m)	Length (m)	Au value (g/t)	Total (g × m)
A	1934-4	0+50W	77	4.76	2.18	10.35
B	1934-6	1+20W	152	1.83	9.02	16.50
C	SAK-01	0+50W	85	0.30	12.44	3.79
D	SAK-02	0+50W	41	0.40	0.93	0.37
E	SAK-03	1+00W	120	0.27	2.80	0.77
F	SAK-04	1+00W	85	6.80	9.33	63.43
G	SAK-05A	1+50W	12	0.52	0.62	0.32
H	SAK-06	1+50W	152	0.24	146.48	35.73
I	SAK-07	0+50E	13	1.40	3.42	4.80
J	SAK-08	0+50E	17	0.76	3.73	2.84
K	SAK-09	1+00E	10	1.04	3.11	3.22
L	SAK-10	1+00E	14	0.52	18.66	9.67
M	SAK-13	2+00W	88	0.30	1.56	0.47
N	SAK-14	2+00W	190	0.30	3.11	0.95
O	SAK-15	0+50E	35	1.31	0.93	1.22
P	SAK-18	1+00E	112	0.76	6.22	4.74
Q	SAK-21	0+75W	75	0.91	5.91	5.40
R	SAK-22	1+15W	118	1.07	48.21	51.44
S	SAK-24	1+50W	190	0.70	5.56	3.93
T	SAK-26	1+25W	97	0.30	3.11	0.95

Depth* vertical distance to surface of piercing point.

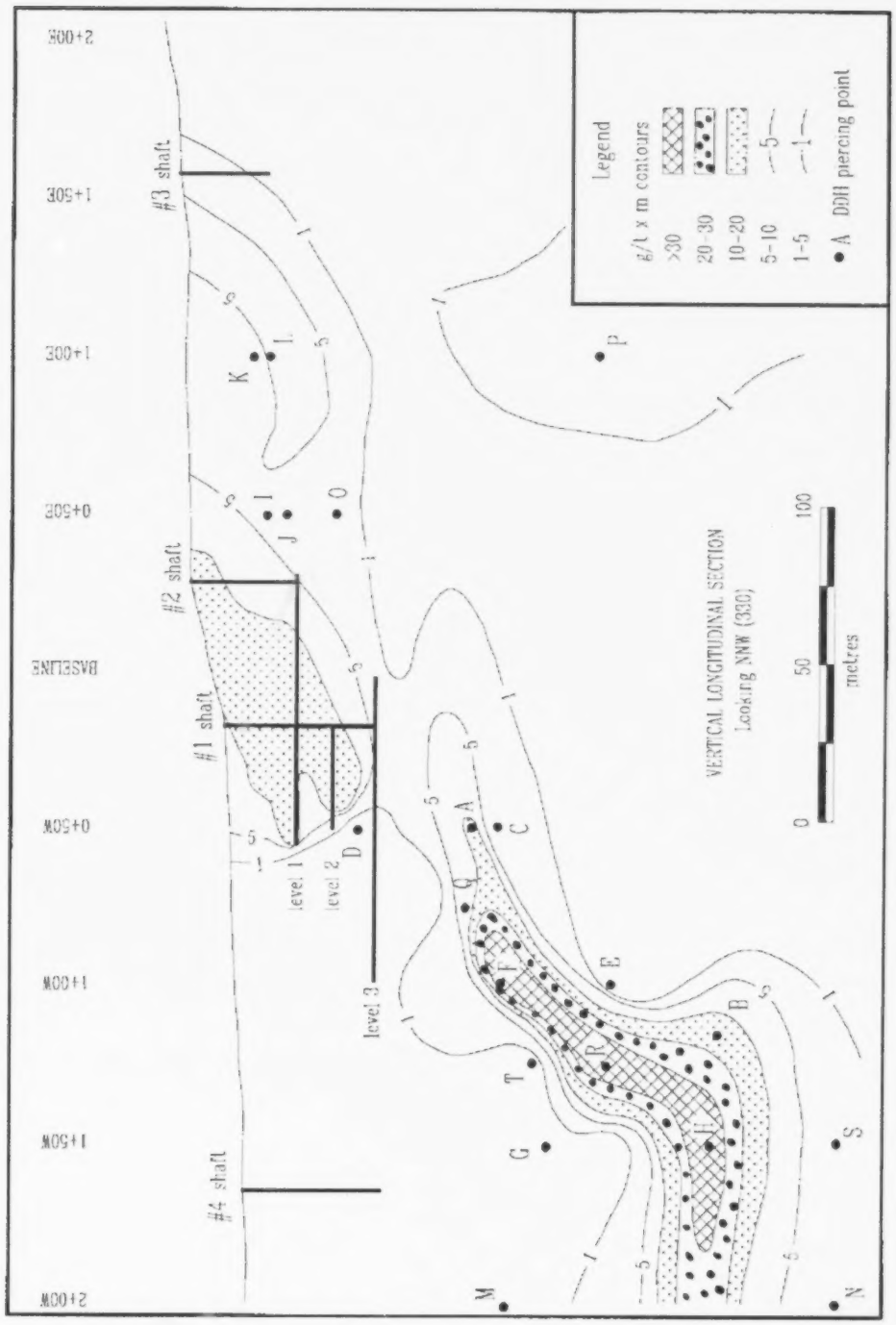


Figure 7. Grade-thickness contours and drill hole piercing points of the Sakoose Mine main quartz vein (*modified after* Hampton 1989).

Scarp Lake Property (A. Raoul and C. Ravnaas)

INTRODUCTION

The Scarp Lake property is located in the Line Lake area (52 F/11NW), approximately 47 km southwest of the City of Dryden, Ontario. The 7 claims that cover the property are under option to Emerald Field Resources from Messrs. Stares of Thunder Bay. The property is located along the southeast shore of Scarp Lake. Access to Scarp Lake is via boat, travelling approximately 8 km along Piskegomang Creek from Eagle Lake (UTM location 466842E, 5498374N, NAD83).

HISTORICAL WORK

In 1997, prospecting by J. Dawson located a Cu-Au showing southeast of Scarp Lake where a grab sample returned 5-6% Cu, 60 gpt Ag, 1 gpt Au and 300 ppm (Kenora District Geologist's office, assessment file 52F11NW Z-1). The showing was staked by Messrs. Stares in 1999 and optioned to Emerald Fields in 2002. From 2002 to 2003, work by Emerald Fields Resources consisted of 1) blasting a small trench on the main showing, 2) additional prospecting and sampling to the south, and 3) an airborne TDEM and total magnetic survey.

REGIONAL GEOLOGY

Davies and Watowitch mapped the regional geology of the Populus Lake area (Davies and Watowitch 1956b). The central and western portions of Scarp Lake are underlain by a 300 to 800 m thick unit of basalt to andesite flows, sheared basalts and minor basaltic to andesitic tuff. The authors observed a regional foliation of 048°/80°E within the basalts. West of this mafic group, a 150 to 200 m thick unit of arkose to arkosic greywacke with minor iron formation is present.

East of Scarp Lake is a large felsic intrusive complex, known as the Higbee Lake granodiorite, consisting dominantly of granodiorite with 5 to 8% blue quartz phenocrysts and lesser amounts of grey, hybrid granite.

A major, northeast-trending fault (050°/90°), known as the Wabigoon fault, is present west of Scarp Lake. The fault occurs at the contact of the mafic volcanic rocks with the metasedimentary rocks.

STRUCTURAL GEOLOGY

The Scarp Lake fault parallels the western boundary of the claim group and occurs near the contact of the mafic volcanic rocks with the Higbee Intrusion. Several, smaller parallel faults, fractures or shears are located throughout this felsic intrusive body. One of these northeast-trending shears is located at the Scarp Lake Cu-Au showing of Emerald Field Resources.

The main mineralized and altered zone is located at the base of an easterly trending ridge. Two distinct fracture patterns were observed in outcrop on the crest of this ridge. A northeast-trending (050°/90°) fracture (F1) that parallels the trend of the Wabigoon and Scarp Lake faults as well as the regional foliation. These fractures do not contain quartz, but are associated with trace amounts of sulphide (pyrite-chalcopyrite). A later, more prominent, northwest trending (120°/90°) fracture (F2), overprints the first set of fractures. A foliation (120°/80°E) parallels the trend of this F2 fracture and is evident in the exposures. There are numerous fractures filled with quartz veins with 1 to 2% sulphides (pyrite-chalcopyrite) that are parallel to this foliation. These quartz veins show S, Z and M folds. This folding may indicate tight isoclinal folding related to the axial plane of a northwest to southeast compressional event.

ECONOMIC GEOLOGY

The quartz-copper-gold mineralized zone is characterized by intense alteration, which grades outward into a surrounding weakly altered zone. The original quartz porphyritic granodiorite has undergone hydrothermal alteration comparable to low to middle amphibolite grade, involving strong feldspar destruction and development of biotite-chlorite-hornblende.

The copper-gold zone has been exposed in a 3.0 by 1.5 by 1.5 m blast pit. The pit exposes the hydrothermally altered, gneissic granodiorite, which contains up to 2% disseminated, fine-grained chalcopyrite±pyrite. Both the F1 and F2 fractures are evident within the pit. The F1 fractures (050°/80°E), that are oriented parallel to the regional foliation, occur as 0.5 to 2 cm breaks every 3 to 5 cm. The F1 fractures contain little to no quartz, but 3 to 5% pyrite and 1 to 2% chalcopyrite. The F2 fractures (120°/90°), occur as 3 to 7 cm breaks every 20 to 30 cm. In contrast to the F1 fractures, these F2 fractures contain mostly quartz. The F2 fractures contain an average of 10% chalcopyrite and 5% pyrite. Sample 14 is typical of these quartz hosted copper-gold veins and returned 4.38% Cu, 46 g/t Ag and 0.31 g/t Au.

An intensely altered zone surrounds this copper-gold zone and continues outward for 4 to 6 m. The host rock is gneissic granodiorite, which exhibits intense feldspar destruction and development of biotite-chlorite-hornblende. The felsic segregations contain up to 1–2% disseminated, fine-grained chalcopyrite±pyrite and minor amounts of calcite (<2%) and malachite and azurite. Samples 08 and 09 are examples of this intensely altered (and oxidized) zone. Sample 08 returned 0.11% Cu and sample 09 returned 0.97% Cu, 21 g/t Ag and 1.87 g/t Au.

A weakly altered zone surrounds the highly altered zone and continues outward for 10 m. The host rock is schistose granodiorite, which has been weakly to moderately altered through feldspar destruction and alteration into more mafic minerals (biotite-chlorite±hornblende). The distinguishing feature of this zone is the presence of relict quartz and feldspar phenocrysts within the mafic groundmass. The sulphide content is trace pyrite-chalcopyrite. Both the fine sulphides and the mafic minerals have been weakly oxidized through weathering. Both the F1 and F2 fractures are evident along the crest of this ridge. The F2 fractures are dominated by quartz veins. This weakly altered zone has undergone less alteration (<50%) than the highly altered zone. Samples 06 and 07 are examples of this weakly altered (and oxidized) zone, but neither displayed anomalous Cu, Ag, or Au.

GEOCHEMISTRY

In the Scarp Lake area, the quartz-eye granodiorite of the Higbee intrusion has been hydrothermally altered to the metamorphic equivalent of low to middle amphibolite grade. Moderate to intense feldspar destruction and alteration produced the mineral assemblage biotite-chlorite-amphibole±sericite. Elevated base and precious metal contents occur with increasing host rock alteration (Tables 8 and 9).

RECOMMENDATIONS

Two structural features are seen in the area. A northeast-trending fracture (050°/90°), the F1, is interpreted to be associated with the regional northeast fractures or shears zones shown on the Populus Lake map sheet. A second, more prominent fracture (120°/90°), the F2, overprints the northeast trend. At the main showing, a localized foliation parallels this F2 fracture.

Preliminary interpretation of the recently completed airborne geophysical survey (Emerald Field Resources, Kenora District office, assessment file 52F/11NW Z-3) reveals a) a large regional magnetic high trending 050°, parallel to the regional foliation within the mafic volcanic rocks and parallel to the Scarp Lake fault (Figure 8), and b) 2 distinct breaks in the magnetic trend, striking 120° and 140°.

The first break parallels F2 fractures and projects through the Cu-Au mineralized zone; strike extensions to the northwest and southeast from the main showing area should be prospected. The second break is located 500 m to the northeast and is a potentially similar mineralized corridor.

Table 8. Major element geochemistry (reported in %) for the Scarp Lake property.

Sample	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O	MnO	P_2O_5	TiO_2	LOI
06	*66.67*	10.55	**16.85**	0.46	**1.37**	*0.54*	1.97	0.17	0.07	0.32	2.27
07	77.91	12.73	3.10	*0.14*	0.47	*0.14*	**4.04**	0.04	0.05	0.30	1.93
08	*64.62*	*9.69*	**16.90**	1.03	**2.65**	*0.56*	2.77	0.10	0.07	0.25	2.31
09	*67.91*	*9.56*	**13.32**	*0.57*	**1.19**	1.85	1.81	0.04	0.06	0.25	2.12
14	*56.78*	*5.63*	**19.02**	**3.30**	**1.23**	*0.01*	*1.03*	0.13	0.03	0.13	2.54

Enriched are **bolded**. Depleted are *italicized*.

Table 9. Metal analyses from the Scarp Lake property.

Sample	Zone	Rock Descriptions	Au (g/t)	Ag (ppm)	Cd (ppm)	Cu (ppm)	Ni (ppm)	Pb (ppm)	Zn (ppm)
06	Weakly altered	Schistose granodiorite	N.D.	3	N.D.	551	10	N.D.	112
07	Weakly altered	Schistose granodiorite	N.D.	2	N.D.	7	6	N.D.	181
08	Highly altered	Gneissic granodiorite with 1% cpy-py	N.D.	3	N.D.	**1150**	N.D.	N.D.	499
09	Highly altered	Gneissic granodiorite with 2-3% cpy-py	**1.87**	**21**	N.D.	**9654**	N.D.	N.D.	387
14	Copper-QV (main zone)	QV with Cpy (10-12%) in gneissic granodiorite	**0.31**	**46**	6	**43822**	N.D.	N.D.	199

Enriched are **bolded**. N.D. – Not Detected (GeoLabs 2004).

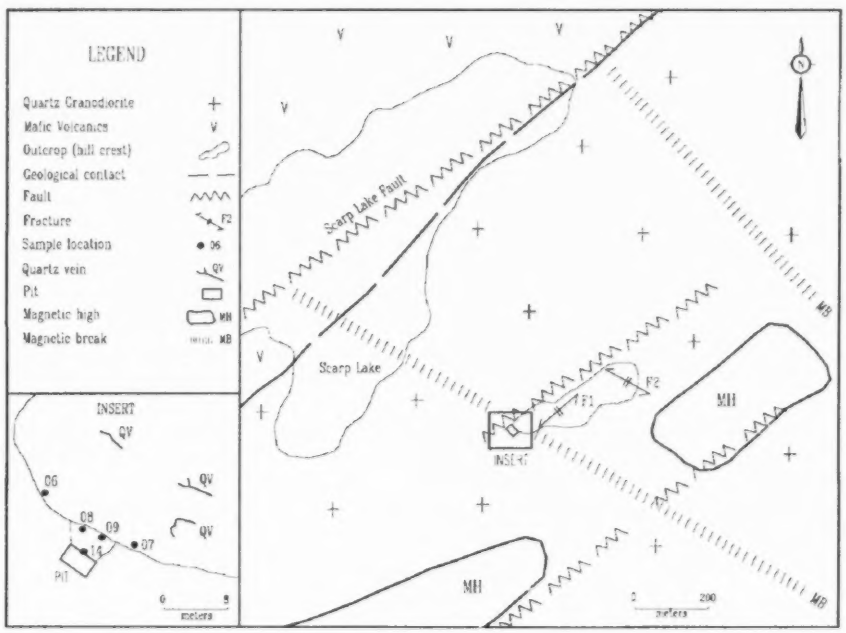


Figure 8. Geology of the Scarp Lake property (*modified after* Davies and Watowitch 1955a).

RECOMMENDATIONS FOR EXPLORATION

Gold Mineralization within Mafic Intrusions (C. Ravnaas and A. Raoul)

The Angel Hill gold zone (AHGZ) is located in a large gabbro intrusion that is part of the extensive Kakagi Lake sills. Exploration efforts by Houston Lake Mining Inc. has been successful in identifying a gold mineralizing event that is unique for a mafic intrusive body.

The AHGZ is defined by "a zone of intense shearing and alteration. The gold zone lies at the contact between ultramafic rocks and gabbroic rocks of a large gabbro sill. The zone varies in width from 7 m to 20 m" (Houston Lake Mining Inc., press release, March 24, 2004). The strike length of the zone is presently 225 m. High-grade gold mineralization is associated with silicified pods or lenses. Recent sampling of the larger pods have returned up to 115 g/t Au (Houston Lake Mining Inc., press release, December 15, 2004).

The alteration has "mainly affected the upper portions of the ultramafic rocks in the footwall and also impinges on the hanging wall gabbro. Alteration consists of ubiquitous carbonatization accompanied by serpentinization, chloritization, fuchsitization and silicification" (Houston Lake Mining Inc., press release, March 24, 2004). Surface expression of the gold zone is evident by the extensive carbonate alteration. Mafic intrusive rocks adjacent to this zone have low evidence of alteration and contain low gold tenor. The unaltered wall rock has elevated magnetite content while the altered portions are devoid of magnetite.

The lithological contact of a mafic intrusion is historically the area examined for gold mineralization. The mineralizing event at the AHGZ is confined to a tabular zone at the boundary between mineralogical phases within the gabbro sill. Quartz veins and hydrothermal alteration localized along mineralogical boundaries between differentiated phases within the interior parts of mafic intrusions should be examined for gold mineralization.

OGS ACTIVITIES AND RESEARCH BY OTHERS

One Ontario Geological Survey (OGS) field project was conducted in the Kenora District in 2004. In addition, 5 university groups conducted research within the district. Figure 9 illustrates the location of 6 of these projects.

A) V.E. Felix, Sedimentary Geoscience Section, OGS, completed field work for a high-density lake sediment and water geochemical survey in the Upper Manitou Lake area.

B) D. Czech, University of Wisconsin, Milwaukee, and D. Fissler (MS student) are conducting a detailed strain analysis of clasts in the Seine River conglomerates, specifically measuring the strain for each lithology type. This data will be used to infer the rheology of the various rock types.

C) D. Czech, University of Wisconsin, Milwaukee, and M. Meeuwsen (BS student) are conducting a thin section study of the Seine River conglomerates to look at details of foliation formation. Studies have suggested that foliation nucleates around competent mineral grains. The student is measuring foliation strands in various levels of deformation to understand the relationship between size and shape of competent mineral grain and nucleating foliation strands.

D) D. Czech, University of Wisconsin, Milwaukee, and S. Maes (PhD student) are conducting a detailed gravity survey of the Ottertail pluton in order to further the work to understand the relative timing of deformation and order of plutonism. The student will use gravity inversion techniques to determine the depth of the pluton and the location of the feeder. Combined with previously collected AMS (anisotropy of magnetic susceptibility) data, the gravity data should help to constrain the possibilities of pluton intrusion.

E) D. Czech, University of Wisconsin, Milwaukee, with J. Carreras and E. Druguet, Universitat Autonoma de Barcelona, have started a study "Syntectonic dikes and veins – unravelling a strain history in the Rainy Lake region, Ontario". They are looking at the complex field geometries formed with multiple intrusions during a prolonged deformation event in order to unravel the strain history. No field work was performed, but they are presently compiling their previous data.

F) K. Duckworth, University of Calgary, did testing of the banded ironstone formations in the Graphic Lake area investigating their induced polarization characteristics.

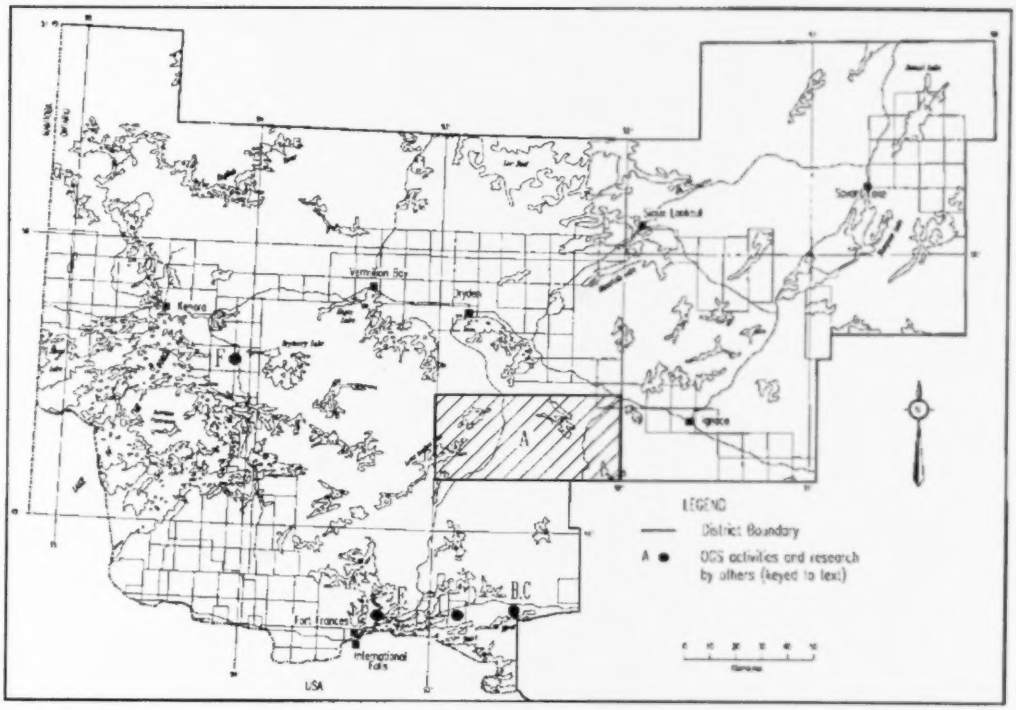


Figure 9. Location of Ontario Geological Survey and other research activities in the Kenora District in 2004.

Table 10. Mineral deposits in the Kenora District 2004.

Abbreviations

AF	Assessment Files	MLS	Mining Lands, Sudbury
CMH	*Canadian Mines Handbook*	MR	Mining Recorder
GR	Geological Report	NM	*The Northern Miner*
MDC	Mineral Deposit Circular	OFR	Open File Report
MDIR	Mineral Deposit Inventory record	PC	Personal Communication
RoA	Report of Activities	SMDR	Source Mineral Deposit Record

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Feb. 1, 2005)
Apex Occurrence (52F/05NE)	Cu, Ni	Zone: 110m x 4m x 180m Estimated Reserve: 237 600 tonnes at 1.03% Cu and 0.56% Ni	GR 111, p.40	Staked claim K1239515
Bad Vermilion Lake–Seine Bay Prospect (52C/10NW)	Fe, Ti, V	Reserves: 1.2 Mt at 15% TiO_2 and 45% Fe. Potential for 177 800 tonnes of titanium sponge	NM 8/15/85, p.3 (Beaver Energy Resources)	Inactive, 8 claims
Bending Lake Prospect (52F0/8SE)	Fe	Main Zone: 1500m long x 300m wide at unknown grade (average of 34% Fe) found by RGP staff, RoA 2001	MDIR NM 4/14/77 (LTV Steel) OFR 6047, p.19 Table 16	Inactive, 70 patented claims MDIR file - K0133
Big Master (Kenwest Mine) (52F/07NE)	Au, Ag	Production: 2565 oz Au and 184 oz Ag from 14 470 tons Indicated 1967 drilling: 30 000 tonnes at 0.36 opt Au Old workings: 19 000 tonnes at 0.30 opt Au Reserves (proven and probable): 123 000 tonnes at 0.30 opt Au and Indicated: 600 000 tonnes at 0.22 opt Au	MDC 16, p.9 CMH, 1988–89, p.92 (Canamerica Precious Metals Inc.)	Inactive, patented claims HP366, HP373, HP301
Big Whopper Pegmatite (52 L/07SE)	Li, Cs, Rb	Preliminary resource estimated at 11.6 Mt averaging 1.34% Li_2O and 0.30 Rb_2O	CMH, 2000–2001, p.45 (Avalon Ventures Ltd.)	Active, 12 staked claims.
Cameron Lake Deposit (52F/05SE)	Au	Reserves (proven, possible, probable): 1.057 Mt at 0.157 opt Au using NI43-101 standards and contains total gold resource >500 000 oz	Press release, 11/13/2004, Nuinsco Resources CMH, 2004–2005, p.323 (Nuinsco)	Care and maintenance, 61 leased claims
Canadian Arrow Prospect (Dogpaw Lake) (52F/05SW)	Au	Indicated Reserves: 96 650 tonnes at 0.43 opt Au in 2 veins	NM 4/05/61 (Consolidated Golden Arrow Mines Ltd.)	Inactive, 17 claims
Canamerica E Zone (52F/07NE)	Au	Reserves: 529 650 tonnes of 0.103 opt Au indicated and inferred in NE Zone	NM 7/13/87, p.17 (Canamerica Precious Metals Inc.), Cochrane Oil & Gas Ltd., AF	Inactive, 45 claims
Cates Prospect (52F/13SE)	Zn, Ag	Zone: 2700m x 12m x 60m Reserves: 5.83 Mt at 0.5% Zn and 0.5 opt Ag	AF 52F/13SE M-1 to M-6 (Noranda) AF 52F/13SE B-1 to B-6 (Rio Algom)	Active, 9 claims

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Feb. 1, 2005)
Cedar Island Deposit (Cornucopia) (52E/10SW)	Au	Production: 5620 oz Au Indicated reserves: 1.096 Mt at 6.63 gt Au, Inferred reserves: 0.832 Mt at 5.63 gpt Au (both Cedar Island and Mikado)	Press release, Amador Gold Corp. 10/6/2003 www.amadorgoldcorp.com	Inactive, patented claims D212, D265
Coste Island Prospect (52E/07NE)	Soapstone	Zone: 600m long x 64m wide Production: unknown Reserves: open	MDF 52E/7NE (Coste Island) MDC 27, p.80	Inactive, OLL and Enhanced Land Management
Dobie Deposit (52C/12NW)	Cu-Ni	Reserves: 5.0 Mt at 0.28% Cu and 0.24% Ni	AF 52C/12NW B-3	Inactive, Patented land and reserve
Dubenski Gold Prospect (52F/05SW)	Au	Drill-indicated reserves: 355 286 tonnes at 6.32 gpt (calculated to a depth of 150m)	CMH, 1999–2000, p.52 (Avalon Ventures)	Inactive, 22 Leased claims
Duport Mine (Consolidated Professor) (52E/11SE)	Au	Production: 4672 oz Au and 1143 oz Ag from 1287 tons Total geological reserves: 2.0 Mt of 0.35 opt Au Proven and Probable: 944 000 tonnes at 0.39 opt Au Estimated pre-production cost $52.8 million (1988)	MDC 16, p.11 CMH, 1995–96 p.111 (Consolidated Professor Mines)	Active, Patented claims S.170, K1332, K1333, K2374
Eagle Lake Soapstone Quarry (52F/11NW)	Soapstone	Production: 174 tonnes (1925–1926) Production: 547.5 tonnes (1993–2000) Reserves: open	MDC 27, p.81 RoA 1994–2000	Active, Patented claim 1169628
Eagle Rock Property (Campbell Zone) (52F/02NE)	Au, Pt, Pd, Cu	Zone: 1350 m long x 18 m true width to 150 m depth. Test results (metallurgical) have shown that a sulphide concentrate may be produced exceeding 20% Cu, 2.5% Ni and almost one ounce of Pt+Pd+Au (11.5 g/t Pd, 9.0 g/t Pt, and 6 g/t Au) per tonne	Champion Bear Resources Ltd. www.championbear.com	Active operation, 28 claims
Electrum Prospect-W Zone (fault / west zone) (52E/11 NE)	Au	Zone: 0.23 opt Au from 61m x 2.1m x 19.8 m zone Reserves: 100 000 tonnes of 0.33 opt Au in the P and W zones combined	OFR 5695, p.108 Laramide Resources Inc. Annual Report, 1987	Inactive, Patented and Leased claims K20696-K28663
Elora (Jubilee) (52F/07NE)	Au	Production: 1370 oz Au and 296 oz Ag from 13 766 tons Reserves (Au): Probable: 228 500 tonnes at 0.18 opt Speculative: 5000 tonnes at 0.10 opt from dump	MDC 16, p.15 OFR 5332, p.37 Table 8	Inactive, Patented claim HP 301
F-Group (52G/14SE)	Cu, Zn, Pb, Ag	Original Reserves (Dec/ 78): 630 000 tonnes at 8.10% Zn, 0.98% Cu, 0.49% Pb, 1.80 opt Ag Reserves (Dec/82): 200 000 at 8.20% Zn, 0.80% Cu, 0.60% Pb, 1.80 opt Ag	CMH 1979–80, p.194 (Noranda) CMH 1982–83, p.254 (Noranda)	Inactive, Patented claims PA312564-65, PA312567-68 and PA226490-91
Flambeau Lake Prospect (52F/10NW)	Au	Reserves: diamond drilling partially outlines a zone with potential for 572 000 tonnes (Au grade unstated)	AF 52F/10NW UU-1 and UU-2	Inactive, Patented claim AL88

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Feb. 1, 2005)
Foley Mine (52C/10NE)	Au	Production: 855 oz Au and 149 oz Ag from 5,680 tons Reserves: 40 000 tonnes at 0.5 opt Au proven/probable and 400 000 tonnes at 0.5 opt Au speculative	MDC 16, p.16 NM 9/25/80 Seaforth Mines Ltd. OFR 5539, p.194	Inactive, Patented claims K475101, K475102, K475103
Gaffney Prospect (52F/07SW)	Au	Reserves: 300 000 tonnes at 0.15 opt Au	CMH, 1990–91, p.393	Inactive, Patents K3594-3595
Golden Star Mine (52C/10NE)	Au	Production: 10 758 oz Au and 34 oz Ag from 19 345 tons Reserves: 20 000 tons at 0.42 opt Au and 35 000 tons at 0.15 opt Au (tailings dump)	MDC 16, p.20	Inactive, Patented Claim AL116, Leased Claim K44632
Goldlund Mine (52F/16NW)	Au	Production: 111 891 tonnes at 0.15 opt Au (Dec. 84) Reserves: 781 000 tonnes at 0.14 opt Au with 150 000 tonnes at 0.15 opt Au that can be mined by open pit	AF 52F/16NW 081 Locke Riche Minerals Ltd. CMH 1995–96, p.223	Inactive, Patented claim KRL 18802
Gordon Lake Mine (52L/07NW)	Cu, Ni, PGE	Production: 1.6 Mt at 0.78% Ni, 0.41% Cu and 0.026 opt Pd (Dec.71) Reserves: 110 000 tonnes at 0.85% Ni and 0.35% Cu (Dec.71)	SMDR 000506 (edited)	Inactive, Mining Patents KRL 19096-97, 29065-66, 30055, 31373-74, 31823-26, 31829-32, 33206, 33208, 33210, 36272-74
High Lake Porphyry (52E/11NE)	Cu, Mo, Au	Zone: 61m long by 77m wide containing assay values of 0.10% to 1.35% Cu and 0.01 to 0.05 opt Au	GR 41, p.46	Inactive, leased claim K32307
High Lake Prospect (Eco Occurrence) (52E/11NE)	Mo, Au	Reserves: 126 000 tonnes at 0.68% MoS_2 and 0.015 opt Au Indicated: 200 000 tonnes at 0.63% MoS_2 Inferred: 550 000 tonnes estimated to a depth of 145m	OFR 5695, p.114	Inactive, patented claims K8705, K8707 and staked claims 1229467, 1229468
Kenbridge Prospect (52F/05NE)	Ni, Cu	Reserves: 2.705 Mt at 1.05% Ni and 0.54% Cu (to a depth of 600m)	Press release, 6/04/2004, Blackstone Ventures	Inactive, patented claims K6672, K6634, K6635
Kenricia Mine (52E/10NE)	Au, Ag	Production: 2553 oz Au and 521 oz Ag from 24 344 tons Reserves: 53 201 tonnes at 0.362 opt Au (1935)	MDC 16, p.23 AF 52E/10NE E-1	Inactive, Patented Mining Land P211
Laurentian Mine (52F/07NE)	Au	Production: 8140 oz Au from 19 950 tons (grade 0.41 opt Au) Reserves (Au): Possible: 50 650 tonnes at 0.25 opt, Speculative 20 000 tonnes at 0.10 opt on dump	MDC 16, p.24 OFR 5332, p.37 Table 8	Inactive, Patented Mining Land HP 371
Little Turtle Lake Soapstone Quarry (52C/15SE)	Soapstone	Production: 17 tonnes (1922–1923) Reserves: open	MDC 27, p.85	Inactive Quarry, Patented claim HP 141
Lockhart Lake (52C/10NW)	Zn, Cu, Au, Ag	Reserves: 6.1 Mt at 1.06% Zn, 0.27% Cu, 3.2 gt Ag and 0.006 gt Au	AF 52C/10NE Y-6	Inactive, Patented claims K417852-854, K418156-157, K446504-509

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Feb. 1, 2005)
Lyon Lake Zone (Creek Zone) (52G/15NW)	Cu, Zn, Pb, Ag	Original Reserves: 3.945 Mt at 6.53% Zn, 1.24% Cu, 0.63 % Pb, 3.42 opt Ag and 0.01 opt Au Reserves: 0.695 Mt of 10.34% Zn, 0.75% Cu, 1.62% Pb and 5.96 opt Ag	CMH 1979–80, p.194 (Noranda) CMH 1990–91, p.332 (Noranda)	Closed Mine, Patented claim CLM 185
Marchington Road Deposit (52J07SE)	Cu, Zn, Pb, Ag	Reserves: 150 000 tonnes at 0.98% Cu, 3.11% Zn, 1.16% Pb, 1.97% Ag	Umex Inc. AF 52J/7SW 0024	Inactive, Patented claim CLM 337
Mattabi Mine (52G/15SW)	Cu, Zn, Pb, Ag	Original Reserves: 13.66 Mt at 7.50% Zn, 0.80% Cu, 0.77% Pb and 3.10 opt Ag Reserves: 0.387 Mt of 0.13% Cu, 9.28% Zn, 0.58% Pb and 1.77 opt Ag	GR 221 p. 4 CMH 1988–89, p.338 (Noranda)	Closed Mine, Patented claims GTP Block 7
Mavis Lake Prospect (52F/15SE)	Li, Ta	Reserves: 500 000 tonnes of 1% LiO_2	OFR 5718, p.151	Inactive, Leased claims K498288-290, K 498292, K498308, K498140
Maybrun Mine (52F/05NE)	Cu, Au	Production: 125 000 tonnes at unknown grades (Aug.73 to Dec.74) Reserves: 2.8 Mt at 1.18 % Cu and 0.08 opt Au (1966)	MDIR K0203 AF 52F/5NE P-1	Inactive, property on care and maintenance, Patented claims K15364-15381, K15524-15527
Mikado Mine (52E/10SW)	Au	Production: 31 000 oz Au (see Cedar Island)	Amador Gold Corp.	Inactive, Patented mining claim D148
Mironsky Prospect (52C/11NE)	Cu	Zone: 122m long by 10m wide zone to a minimum depth of 90m averaging 0.53–1.01% Cu Reserves: 300 000 tonnes at 0.8% Cu (estimated)	MDC 29, p.42	Inactive, Staked claim 1238036
Norpax (Reynar Lake) (52L/06NE)	Ni, Cu	2002 Drilling intersected 3.35m of 1.308 gpt PGE and 2.94% Cu, Ni Reserves: 1 Mt at 1.2% Ni and 0.5% Cu	Press release, Atikwa Minerals, 8/28/2003 Norpax Nickel Mines Ltd., AF	Inactive, Patented claims KRL350101 and KRL34767
North Kaskaweogama Prospect (52J/07NW)	Fe	Reserves: 405 000 tons at 28% Fe in 4 zones and a possible 50 Mt at unstated grade	MDC 11, p.443	Inactive, Open Crown Land
North Pines Mine (52K/01SE)	Pyrite	Production: 500 000 tonnes at 28% Fe (1909–21) Reserves: open	GR 101, p.36	Inactive, Patented claim HW 715
North Rock Mine (South Grassy) (52C/11NE)	Cu	Zone: 400m x 2–30m x 91m Reserves: 1.1 Mt tonnes at 1.17 % Cu including 265 230 tonnes at 2.08% Cu	OFR 5512, p.50	Active, 8 Staked claims
Northern Peninsula Mariposite (52E/10NE)	Mariposite	Zone: Over 700m long x 7–8m thick and vertically dipping Produced: unknown (1972–76) Reserves: open	MDC 27, p.63	Inactive, Staked claim 1178801
Pidgeon Molybdenum Mine (52F/16NW)	Mo	Resource: 275 000 tonnes of 0.6 % Mo	OFR 5518, p.113 MDC 7, p.38	Inactive, Patented claim Pa 14051

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Feb. 1, 2005)
Pipestone Peninsula Soapstone Quarry (52E/09NW)	Soapstone	Zone: Over 500m long x 23m wide and vertically dipping Production: 4 carloads (~400 tons) Reserves: open	MDC 27, p.89	Inactive quarry, Open Crown Land, W.L.L. C-2366
Port Arthur Copper (51C/15SE)	Cu, Zn	Production: 26 509 lbs Cu Estimated Reserves: 48 895 tonnes at 1.18% Cu and 0.43% Zn	Lichtblau et al. (2001)	Inactive, patented claim FF4261
Purdex Prospect (A-D Zones) (52E/11NE)	Au	Reserves: 1) 76 500 tonnes at 0.308 opt Au (indicated tonnage in 4 zones) 2) 241 000 tonnes at 0.226 opt Au in the P, A, B and C zones	OFR 5695, p.273 CMH, 1995–96 p.233	Inactive, patented claims K25130-131
Rainbow Quarry (52K/01SW)	Mariposite	Trench: 46.5m x 1–3m x 1–2m Production: 186m^3 Reserves: open	MDC 27, p.58	Inactive quarry, Staked claim 1162920
Rainy River Zone 17, 34 (52D/16SE)	Au, PGE, Cu, Ni	Zone 17: Indicate Resource: 1.74 Mt of 1.56 g/t Au, 0.03% Cu, 0.21% Zn and 4.0 g/t Ag Inferred Resource: 11.0 Mt of 1.33 g/t Au, 0.02% Cu, 0.20% Zn and 3.60 g/t Ag Zone 34 Resource: Weighted average grades of 2.19% Ni, 1.55% Cu, 0.11% Co, 2.51 g/t Pt, 5.91 g/t Pd, 3.20 g/t Au and 19.0 g/t Ag	Press release, 12/17/2004, Nuinsco Resources Press release, 12/17/2004, Nuinsco Resources	Active, Patented Land
Regina Mine (52E/08NE)	Au, Ag	Production: over 8000 oz Au and 1460 oz Ag from 36 828 tons Reserves (Au): Speculative 19 650 tonnes at 0.44 opt with 30 000 tonnes at 0.106 opt in tailings	MDC 16, p.34 AF 52E/8NE Q-1 NM 7/25/88, p.7 Sweaney Gold Corp.	Inactive, Patented claims P566-67
Rush Bay Quarry (52E/10NW)	Flag-stone	Quarry: 100m x 12m x 4 m Estimated production: 4800 m^3 (1978–86) Reserves: open	MDC 27, p.59 (86)	Inactive quarry Alienation 1516 (Rock Aggregate Permit)
Sakoose Mine (52F/09SW)	Au, Ag	Production: 3669 oz Au and 145 oz Ag from 8828 tons Reserves: 50 000 tonnes at 0.41 opt Au	MDC 16, p.36	Inactive, Staked claim 1244771
Scramble Mine (Homestake) (52E/16SW)	Au	Zone: 366m to 457m x 3.7m wide zone at 0.15 opt Au Reserves: 150 000 tonnes at 0.24 opt and 70 000 oz (at 0.05 opt cut-off) drill indicated	NM 7/25/88 (Madeline Mines Ltd.) CIMM, Dist.4 Field Trip Guidebook, p.44	Inactive, Jaffray Tp., Con.6, Lot 13 and 14
St Anthony Mine (52J/02SE)	Au	Production: 331 069 tons at 0.19 opt Au Reserves: 37 800 tons at 0.18 opt Au	MDC 13, p.295	Inactive, Patented claim BG 154
Straw Lake Beach Mine (52F/03NW)	Au, Ag	Production: 11 568 oz Au and 1049 oz Ag from 33 662 tons Reserves (Au): Probable: 32 000 tonnes at 0.20 opt, Possible: 32 000 tonnes 0.20 opt and 30 000 tonnes at 0.15 opt Speculative: 48,000 tonnes 0.20 opt	MDC 16, p.38 OFR 5332, table 14, p.47	Inactive, 10 Patented mining claims K4021-4022, K4035-4040, K9037-9040

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Feb. 1, 2005)
Sturgeon Lake Mine (52G/15NW)	Cu, Zn, Pb, Ag	Original Reserves (Dec/74): 2.10 Mt at 10.64% Zn, 2.98% Cu, 1.47% Pb, 6.14 opt Ag and 0.021 opt Au Reserves (Dec/78): 599 000 tonnes at 2.34% Cu, 8.98% Zn, 1.30% Pb, 5.17 opt Ag and 0.018 opt Au	GR 211, p.4 CMH 1980–81, p.102 (Falconbridge)	Inactive, Patented claim
Sultana Mine (52E0/9NW)	Au	Production: 15 977 oz Au from 77 481 tons (grade of 0.21 opt) Reserves: none available	MDC 16, p.38	Inactive, Patented mining claim K489932 and claim 1086199
Tabor Lake Mine (52F/09SW)	Au, Ag	Production: 36 oz Au and 4 oz Ag from 87 tons Indicated Reserves: 50 000 tons at 0.5 opt Au	MDC 16, p.39	Inactive, 37 patented claims, mine site on K502044
Thunder Lake Deposit (52 F/15SE)	Au	Bulk Sampling: 428 oz Au and 1161 oz Ag from 2365 tonnes Inferred Resource: 2.974 Mt averaging 6.47 g/t Au	Corona Gold 1999 Annual Report, CMH, 2004–2005, p.127 (Corona Gold Corp.)	Inactive, Patented and Staked claims
Trap Lake (52F/10NW)	Soapstone	2 Zones: Island 246 (16.3 Ha) and 249 (0.3 Na) Resource: open	MDC 27, p.90	Inactive, Patented land K3829
Vanlas Prospect (52F/10NW)	Au	Reserves: 100 000 tonnes at 0.20 opt Au	Power Expl. Inc. AF 52F/10NW UU-1	Inactive, patented claim K70627
Victor Island Prospect (52F/05SE)	Au	Reserves: Drill indicated 300 000 tonnes at 0.12 opt Au to a depth of 213 m	MP 128, p.16	Inactive, patented claim K4712 Claims 690655, 718785
Wabigoon Prospect (52F/10NE)	Soapstone	2 Zones: both are 15–20m wide by 600 m long and vertically dipping. Reserves: open	MDC 27, p.91	Inactive, Patented mining claim HW 133
Wendigo Mine (52E/09NE)	Au, Ag, Cu	Production: 67 423 oz Au, 14 762 oz Ag and 1.89 million lbs. of Cu from 206 054 tonnes Reserves (Au): Vein 1: 110m x 0.8m x 230m depth @ 0.33 opt Au (production vein) Vein 2: 118m x 0.6m Vein 3: 180m x 0.3m Vein 4: unknown Tailings: 61 970 tonnes at 0.027 opt Au	SMDR 001350 OFR 5695, p.352	Inactive, Patented mining claims MH 208-210
Werner Lake Cobalt (52L/07NW)	Co, Cu	Production: recovered 389 363 lbs of Co (1932, 1940–44); grades 2% Co and 0.75% Cu Reserves: 1.01 Mt at 0.31% Co and 0.29% Cu	MDC 1, p.37 Press release, Canmine Resource, 2/9/1999	Inactive, Patented mining claim KRL 9383
Wind Bay Prospect (52C/10NW)	Zn, Cu	Zone: 1300m x 46m x 10m Estimated resource: 1.79 Mt at 1.5% Zn and 0.2% Cu	OFR 5512, p.89	Inactive, Patented mining claim 594P

The reference to resources is based on data before National Instrument 43-101 went into effect. These resources calculations may not meet criteria for National Instrument 43-101.

REFERENCES

Blackburn, C.E., Hailstone, M.R., Parker, J. and Storey, C.C. 1986. Kenora Resident Geologist Area, Northwestern Region; *in* Report of Activities 1985, Regional and Resident Geologists, Ontario Geological Survey, Miscellaneous Paper 128, p.1-45.

Davies, J.C. 1965. Geology of High Lake–Rush Bay area, District of Kenora; Ontario Division of Mines, Geological Report 41, 57p.

——— 1973. Geology of the Atikwa Lake area, District of Kenora; Ontario Division of Mines, Geological Report 111, 58p.

Davies, J.C. and Smith, P.M. 1988. The geological setting of gold occurrences in the Lake of the Woods area; Ontario Geological Survey, Open File Report 5695, 381p.

Davies, J.C. and Watowitch, S.N. 1956a. Geology of the Populus Lake area, District of Kenora; Ontario Department of Mines, Annual Report, 1956, v.65, pt.4, p.1-21.

——— 1956b. Geology, Populus Lake area, Kenora District; Ontario Department of Mines, Map 1956-3, scale 1:31 680.

Delisle, P.C. 1990. Geological report on the Sakoose Property; Kenora District Geologist's office, assessment file 52F09SW XX-16, Redden.

Geological Survey of Canada 1987. Kenora–Fort Frances aeromagnetic and VLF–EM survey; Geological Survey of Canada, database project number 17600.

Hampton, R.J. 1989. Sakoose Property diamond drill report; Kenora District Geologist's Office, assessment file 52F09SW OO-1, Venturex Resources Ltd.

Hinz, P., Landry, R.M. and Gerow, M.C. 1994. Dimension stone occurrences and deposits in northwestern Ontario; Ontario Geological Survey, Open File Report 5890, 191p.

Johnston, F.J. 1972. Geology of the Vermilion–Abram lakes area, District of Kenora; Ontario Division of Mines, Geological Report 101, 51p.

Lichtblau, A., Raoul, A., Ravnaas, C., Storey, C.C., Kosloski, L., Debicki, R. and Drost, A. 2001. Report of Activities 2000, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts; Ontario Geological Survey, Open File Report 6047, 109p.

Neilson, J.N. and Bray, R.C.E. 1981. Feasibility of small scale gold mining in northwestern Ontario (parts of the districts of Kenora, Rainy River and southwestern Thunder Bay); Ontario Geological Survey, Open File Report 5332, Volume 1–Text, 132p.

Ontario Geological Survey 2003. 1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release—Data 126.

Page, R.O. 1984. Geology of the Lateral Lake area, District of Kenora; Ontario Geological Survey, Open File Report 5518, 175p.

Parker, J.R. 1989. Geology, gold mineralization and property visits in the area investigated by the Dryden–Ignace Economic Geologist, 1984–1987; Ontario Geological Survey, Open File Report 5723, 306p.

Poulsen, K.H. 1984. The geological setting of mineralization in the Mine Centre–Fort Frances area, District of Rainy River; Ontario Geological Survey, Open File Report 5512, 50p.

Ravnaas, C. and Raoul, A. 2001. Red Lake Regional Resident Geologist (Kenora District)–2000; *in* Report of Activities 2000, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts, Ontario Geological Survey, Open File Report 6047, p.1-51.

Schnieders, B.R. and Dutka, R. 1985. Property visits and reports of the Atikokan Economic Geologists, 1979–1983, Atikokan Geological Survey; Ontario Geological Survey, Open File Report 5539, 512p.

Storey, C.C. 1990. An evaluation of the industrial mineral potential of parts of the districts of Kenora and Rainy River; Ontario Geological Survey, Open File Report 5718, 259p.

Trowell, N.F. 1983. Geology of the Sturgeon Lake area, districts of Thunder Bay and Kenora; Ontario Geological Survey, Geological Report 221, 97p.

——— 1986. Geology of the Gibi Lake area, District of Kenora; Ontario Geological Survey, Open File Report 5629, 153p.

Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
		LENGTH			
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
		AREA			
1 cm^2	0.155 0	square inches	1 square inch	**6.451 6**	cm^2
1 m^2	10.763 9	square feet	1 square foot	**0.092 903 04**	m^2
1 km^2	0.386 10	square miles	1 square mile	2.589 988	km^2
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
		VOLUME			
1 cm^3	0.061 023	cubic inches	1 cubic inch	**16.387 064**	cm^3
1 m^3	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m^3
1 m^3	1.307 951	cubic yards	1 cubic yard	0.764 554 86	m^3
		CAPACITY			
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
		MASS			
1 g	0.035 273 962	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 747	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 622 6	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311 3	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 90**	t
		CONCENTRATION			
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	31.103 477	grams per ton (short)
1 gram per ton (short)	0.032 151	ounces (troy) per ton (short)
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.

ISSN 1484-9445
ISBN 0-7794-7574-7